



Rules of
Department of Natural Resources
Division 20—Clean Water Commission
Chapter 7—Water Quality

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**Title 10—DEPARTMENT OF
NATURAL RESOURCES**

**Division 20—Clean Water Commission
Chapter 7—Water Quality**

**10 CSR 20-7.010 Prevention of Pollution
from Wells to Subsurface Waters of the
State**

(Rescinded July 10, 1980)

AUTHORITY: section 204.026, RSMo 1978. Original rule filed June 19, 1974, effective June 29, 1974. Amended: Filed April 1, 1975, effective April 11, 1975. Rescinded: Filed Oct. 12, 1979, effective July 10, 1980.

10 CSR 20-7.015 Effluent Regulations

PURPOSE: This rule sets forth the limits for various pollutants which are discharged to the various waters of the state. The two previous rules 10 CSR 20-6.050 and 10 CSR 20-7.010 have been rescinded and this rule combines certain aspects of both rules and modifies the format of the effluent regulations. This rule also complies with the latest changes to the Federal Clean Water Act, P.L. 97-117 (1981).

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Designations of Waters of the State.

(A) Definitions.

1. Acute Toxicity Test—a test used to determine the concentration of an effluent that causes an adverse effect (usually death) in a group of test organisms during a short-term exposure.

2. Allowable Effluent Concentration—the concentration of a toxicant or the parameter toxicity in the receiving water after mixing, sometimes referred to as the receiving water concentration or the in-stream waste concentration.

3. Chronic Toxicity Test—A short-term test, usually ninety-six (96) hours or longer in duration, in which sub-lethal effects such as reduced growth or reproduction rates are measured in addition to lethality.

4. Representative sample—a small quantity whose characteristics represent the nature and volume of the whole. For permitting purposes representative sampling shall be consistent with 40 CFR Part 122.48.

5. Toxic Unit—a measure of effluent toxicity generally expressed as acute toxicity unit or chronic toxicity unit. The larger the toxicity unit, the greater the toxicity.

6. Toxic Unit—Acute—one-hundred (100) times the reciprocal of the effluent concentration that causes fifty percent (50%) of the organisms to die in an acute toxicity test.

7. Toxic Unit—Chronic—one-hundred (100) times the reciprocal of the highest effluent concentration that causes no observable effect on the test organism in a chronic toxicity test.

(B) For the purpose of this rule, the waters of the state are divided into the following categories:

1. The Missouri and Mississippi Rivers (section (2) of this rule);

2. Lakes and reservoirs, including natural lakes and any impoundments created by the construction of a dam across any waterway or watershed. An impoundment designed for or used as a disposal site for tailings or sediment from a mine or mill shall be considered a wastewater treatment device and not a lake or reservoir. Releases to lakes and reservoirs include discharges into streams one-half (1/2) stream mile (.80 km) before the stream enters the lake as measured to its conservation pool (section (3) of this rule);

3. A losing stream is a stream which distributes thirty percent (30%) or more of its flow through natural processes such as through permeable geologic materials into a bedrock aquifer within two (2) miles flow distance downstream of an existing or proposed discharge. Flow measurements to determine percentage of water loss must be corrected to approximate the seven (7)-day Q10 stream flow. If a stream bed or drainage way has an intermittent flow or a flow insufficient to measure in accordance with this rule, it may be determined to be a losing stream on the basis of channel development, valley configuration, vegetation development, dye tracing studies, bedrock characteristics, geographical data, and other geological factors. Only discharges which in the opinion of the Missouri Department of Natural Resources (department) reach the losing section and which occur within two (2) miles upstream of the losing section of the stream shall be considered releases to a losing stream. A list of known losing streams is available in the Water Quality Standards, 10 CSR 20-7.031 Table J—Losing Streams. Other streams may be determined to be losing by the department (section (4) of this rule);

4. Metropolitan no-discharge streams. These streams and the limitations on discharging to them are listed in Table F of 10 CSR 20-7.031 Water Quality Standards;

5. Special streams—Outstanding National Resource Waters and Outstanding State Resource Waters, as listed in Tables D and E of 10 CSR 20-7.031 (section (6) of this rule);

6. Subsurface waters in aquifers (section (7) of this rule); and

7. All other waters except as noted in paragraphs (1)(B)1.-6. of this rule (section (8) of this rule).

(C) Sections (2) through (8) of this rule establish requirements for discharges to the waters specified in these sections, and the requirements of section (9) of this rule apply to all discharges. The requirements of this rule do not apply to stormwater discharges; effluent limits for stormwater discharges are prescribed in 10 CSR 20-6.200 Storm Water Regulations.

(2) Effluent Limitations for the Missouri and Mississippi Rivers. In addition to the requirements of section (9) of this rule, the following limitations represent the maximum amount of pollutants which may be discharged from any point source, water contaminant source, or wastewater treatment facility.

(A) Discharges from wastewater treatment facilities which receive primarily domestic waste or from publicly-owned treatment works (POTWs) shall undergo treatment sufficient to conform to the following limitations:

1. Biochemical Oxygen Demand₅ (BOD₅) and Total Suspended Solids (TSS) equal to or less than a monthly average of thirty milligrams per liter (30 mg/L) and a weekly average of forty-five milligrams per liter (45 mg/L);

2. pH shall be maintained in the range from six to nine (6-9) standard units;

3. Exceptions to paragraphs (2)(A)1. and 2. of this rule are as follows:

A. If the facility is a wastewater lagoon, the TSS shall be equal to or less than a monthly average of eighty milligrams per liter (80 mg/L) and a weekly average of one hundred twenty milligrams per liter (120 mg/L) and the pH shall be maintained above six 6.0, and the BOD₅ shall be equal to or less than a monthly average of forty-five milligrams per liter (45 mg/L) and a weekly average of sixty-five milligrams per liter (65 mg/L);

B. If the facility is a trickling filter plant the BOD₅ and TSS shall be equal to or less than a monthly average of forty-five milligrams per liter (45 mg/L) and a weekly average of sixty-five milligrams per liter (65 mg/L);



C. Where the use of effluent limitations set forth in this section is known or expected to produce an effluent that will endanger or violate water quality, the department will set specific effluent limitations for individual dischargers to protect the water quality of the receiving streams. When a waste load allocation is conducted for a stream or stream segment, all permits for discharges in the study area shall be modified to reflect the limits established in the study in accordance with any applicable compliance schedule;

D. The department may require more stringent limitations than authorized in paragraphs (2)(A)1. and 2. and subparagraphs (2)(A)3.A., B., and C. of this rule under the following conditions:

(I) If the facility is an existing facility, the department may set the BOD₅ and TSS limits based upon an analysis of the past performance, rounded up to the next five milligrams per liter (5 mg/L) range; and

(II) If the facility is a new facility, the department may set the BOD₅ and TSS limits based upon the design capabilities of the plant considering geographical and climatic conditions;

(a) A design capability study has been conducted for new lagoon systems. The study reflects that the effluent limitations should be BOD₅ equal to or less than a monthly average of forty-five milligrams per liter (45 mg/L) and a weekly average of sixty-five milligrams per liter (65 mg/L) and TSS equal to or less than a monthly average of seventy milligrams per liter (70 mg/L) and a weekly average of one hundred ten milligrams per liter (110 mg/L).

(b) A design capability study has been conducted for new trickling filter systems and the study reflects that the effluent limitations should be BOD₅ and TSS equal to or less than a monthly average of forty milligrams per liter (40 mg/L) and a weekly average of sixty milligrams per liter (60 mg/L);

4. Sludges removed in the treatment process shall not be discharged. Sludges shall be routinely removed from the wastewater treatment facility and disposed of or used in accordance with a sludge management practice approved by the department; and

5. When the wastewater treatment process causes nitrification which affects the BOD₅ reading, the permittee can petition the department to substitute carbonaceous BOD₅ in lieu of regular BOD₅ testing. If the department concurs that nitrification is occurring, the department will set a carbonaceous BOD₅

at five milligrams per liter (5 mg/L) less than the regular BOD₅ in the operating permit.

(B) The suspended solids which are present in stream water and which are removed during treatment may be returned to the same body of water from which they were taken, along with any additional suspended solids resulting from the treatment of water to be used as public potable water or industrial purposes using essentially the same process as a public water treatment process. This includes the solids that are removed from potable waters that are withdrawn from wells located in the alluvial valley of the Missouri and Mississippi Rivers.

(C) Monitoring Requirements.

1. The department will develop a wastewater and sludge sampling program based on design flow that shall require, at a minimum, one (1) wastewater sample per year for each fifty thousand (50,000) gallons per day (gpd) of effluent, or fraction thereof, except that—

A. Point sources that discharge less than twenty-five thousand (25,000) gpd may only be required to submit an annual report;

B. The department may establish less frequent sampling requirements for point sources that produce an effluent that does not exhibit high variability and consistently complies with the applicable effluent limit; and

C. Sludge sampling will be established in the permit.

2. Sampling frequency shall be representative of the discharge during the period the sampling covers (daily, weekly, monthly, seasonally, etc.).

3. Sample types shall be as follows:

A. Samples collected from lagoons may be grab samples;

B. Samples collected from mechanical plants shall be twenty-four (24)-hour composite samples, unless otherwise specified in the operating permit; and

C. Sludge samples will be grab samples unless otherwise specified in the operating permit.

4. The monitoring frequency and sample types stated in subsection (2)(C) of this rule are minimum requirements. The permit writer shall establish monitoring frequencies and sampling types to fulfill the site-specific informational needs of the department.

(3) Effluent Limitations for the Lakes and Reservoirs.

(A) In addition to the requirements of section (9) of this rule, the following limitations represent the maximum amount of pollutants which may be discharged from any point source, water contaminant source, or wastewater treatment facility to a lake or reservoir

designated in 10 CSR 20-7.031 as L2 and L3 which is publicly owned. Releases to lakes and reservoirs include discharges into streams one-half (1/2) stream mile (.80 km) before the stream enters the lake as measured to its conservation pool.

1. Discharges from wastewater treatment facilities which receive primarily domestic waste or from POTWs shall undergo treatment sufficient to conform to the following limitations:

A. BOD₅ and TSS equal to or less than a monthly average of twenty milligrams per liter (20 mg/L) and a weekly average of thirty milligrams per liter (30 mg/L);

B. pH shall be maintained in the range from six to nine (6–9) standard units;

C. Where the use of effluent limitations set forth in section (3) of this rule are reasonably expected to exceed applicable water quality standards, the department may either—conduct waste load allocation studies in order to arrive at a limitation which protects the water quality of the state or set specific effluent limitations for individual dischargers to protect the water quality of the receiving streams. When a waste load allocation study is conducted for a stream or stream segment, all permits for discharges in the study area shall be modified to reflect the limits established in the waste load allocation study in accordance with any applicable compliance schedule;

D. Sludges removed in the treatment process shall not be discharged. Sludges shall be routinely removed from the wastewater treatment facility and disposed of or used in accordance with a sludge management practice approved by the department; and

E. When the wastewater treatment process causes nitrification which affects the BOD₅ reading, the permittee can petition the department to substitute carbonaceous BOD₅ in lieu of regular BOD₅ testing. If the department concurs that nitrification is occurring, the department will set a carbonaceous BOD₅ at five milligrams per liter (5 mg/L) less than the regular BOD₅ in the operating permit.

(B) Monitoring Requirements.

1. The department will develop a wastewater and sludge sampling program based on design flow that will require, at a minimum, one (1) wastewater sample per year for each twenty-five thousand (25,000) gpd of effluent, or fraction thereof, except that—

A. Point sources that discharge less than five thousand (5,000) gpd may only be required to submit an annual report;

B. The department may establish less frequent sampling requirements for point sources that produce an effluent that does not



exhibit high variability and consistently complies with the applicable effluent limit; and

C. Sludge sampling will be established in the permit.

2. Sampling frequency shall be representative of the discharge during the period the sampling covers (daily, weekly, monthly, seasonally, etc.).

3. Sample types shall be as follows:

A. Samples collected from lagoons may be grab samples;

B. Samples collected from mechanical plants shall be twenty-four (24)-hour composite samples, unless otherwise specified in the operating permit; and

C. Sludge samples shall be grab samples unless otherwise specified in the operating permit.

4. The monitoring frequency and sample types stated in paragraphs (3)(B)1. through 3. of this rule are minimum requirements. The permit writer shall establish monitoring frequencies and sampling types to fulfill the site-specific informational needs of the department.

(C) For lakes designated in 10 CSR 20-7.031 as L1, which are primarily used for public drinking water supplies, there will be no discharge into the watersheds above these lakes from domestic or industrial wastewater sources regulated by these rules. Discharges from potable water treatment plants, such as filter wash, may be permitted. Separate storm sewers will be permitted, but only for the transmission of storm water. Discharges permitted prior to the effective date of this requirement may continue to discharge so long as the discharge remains in compliance with its operating permit.

(D) For lakes designated in 10 CSR 20-7.031 as L3 which are not publicly owned, the discharge limitations shall be those contained in section (8) of this rule.

(E) In addition to other requirements in this section, discharges to Lake Taneycomo and its tributaries between Table Rock Dam and Power Site Dam (and excluding the discharges from the dams) shall not exceed five tenths milligrams per liter (0.5 mg/L) of phosphorus as a monthly average. Discharges meeting both the following conditions shall be exempt from this requirement:

1. Those permitted prior to May 9, 1994; and

2. Those with design flows of less than twenty-two thousand five hundred (22,500) gpd. All existing facilities whose capacity is increased would be subject to phosphorus limitations. The department may allow the construction and operation of interim facilities without phosphorus control provided their discharges are connected to regional

treatment facilities with phosphorus control not later than three (3) years after authorization. Discharges in the White River basin and outside of the area designated above for phosphorus limitations shall be monitored for phosphorus discharges, and the frequency of monitoring shall be the same as that for BOD₅ and TSS, but not less than annually. The department may reduce the frequency of monitoring if the monitoring data is sufficient for water quality planning purposes.

(F) In addition to other requirements in this section, discharges to Table Rock Lake watershed, defined as hydrologic units numbered 11010001 and 11010002, shall not exceed five-tenths milligrams per liter (0.5 mg/L) of phosphorus as a monthly average except those existing discharges with design flows of less than twenty-two thousand five hundred (22,500) gpd permitted prior to November 30, 1999, unless the design flow is increased.

(4) Effluent Limitations for Losing Streams.

(A) Discharges to losing streams shall be permitted only after other alternatives including land application, discharge to a gaining stream, and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

(B) In addition to the requirements of section (9) of this rule, each permit for a discharge from a wastewater treatment facility to a losing stream, shall be written using the limitations contained in subsections (4)(B) and (C) of this rule in accordance with any applicable compliance schedule. Discharges from private wastewater treatment facilities which receive primarily domestic waste, industrial sources that treat influents containing significant amounts of organic loading, or POTWs permitted under this section shall undergo treatment sufficient to conform to the following limitations:

1. BOD₅ equal to or less than a monthly average of ten milligrams per liter (10 mg/L) and a weekly average of fifteen milligrams per liter (15 mg/L);

2. TSS equal to or less than a monthly average of fifteen milligrams per liter (15 mg/L) and a weekly average of twenty milligrams per liter (20 mg/L);

3. pH shall be maintained in the range from six to nine (6–9) standard units;

4. All chlorinated effluent discharges to losing streams or within two (2) stream miles flow distance upstream of a losing stream shall also be dechlorinated prior to discharge;

5. Sludges removed in the treatment process shall not be discharged. Sludges shall be routinely removed from the wastewater treat-

ment facility and disposed of or used in accordance with a sludge management practice approved by the department;

6. When the wastewater treatment process causes nitrification which affects the BOD₅ reading, the permittee can petition the department to substitute carbonaceous BOD₅ in lieu of regular BOD₅ testing. If the department concurs that nitrification is occurring, the department will set a carbonaceous BOD₅ at five milligrams per liter (5 mg/L) less than the regular BOD₅ in the operating permit; and

7. For situations in which nitrates in a discharge can be reasonably expected to impact specific drinking water wells, the concentration of nitrates in the discharge shall be limited to an average monthly limit of ten milligrams per liter (10 mg/L) as nitrogen and a maximum daily limit of twenty milligrams per liter (20 mg/L). Applicants may conduct a study in the same manner as the Missouri Risk-Based Corrective Action Technical Guidance published in 2006 to determine if nitrate limits are necessary to protect groundwater. In such cases, applicants shall submit a study plan for approval prior to the study, and submit all findings as part of their permit application.

(C) Monitoring Requirements.

1. The department will develop a wastewater and sludge sampling program based on design flow that shall require, at a minimum, one (1) wastewater sample per year for each twenty-five thousand (25,000) gpd of effluent, or fraction thereof, except that—

A. Point sources that discharge less than five thousand (5,000) gpd may only be required to submit an annual report;

B. The department may establish less frequent sampling requirements for point sources that produce an effluent that does not exhibit high variability and consistently complies with the applicable effluent limit; and

C. Sludge samples will be established in the permit.

2. Sampling frequency shall be representative of the discharge during the period the sampling covers (daily, weekly, monthly, seasonally, etc.).

3. Sample types shall be as follows:

A. Samples collected from lagoons and recirculating sand filters may be grab samples;

B. Samples collected from mechanical plants shall be twenty-four (24)-hour composite samples, unless otherwise specified in the operating permit; and

C. Sludge samples shall be a grab sample unless otherwise specified in the operating permit.



4. The monitoring frequency and sample types stated in paragraphs (4)(C)1. through 3. of this rule are minimum requirements. The permit writer shall establish monitoring frequencies and sampling types to fulfill the site-specific informational needs of the department.

(5) Effluent Limitations for Metropolitan No-Discharge Streams.

(A) Discharge to metropolitan no-discharge streams is prohibited, except as specifically permitted under the Water Quality Standards 10 CSR 20-7.031 and noncontaminated storm water flows.

(B) Monitoring Requirements.

1. The department will develop a wastewater and sludge sampling program based on design flow that shall require, at a minimum, one (1) wastewater sample per year for each twenty-five thousand (25,000) gpd of effluent, or fraction thereof, except that—

A. Point sources that discharge less than five thousand (5,000) gpd may only be required to submit an annual report;

B. Point sources that discharge more than one point three (1.3) mgd will be required, at a minimum, to collect fifty-two (52) wastewater samples per year. The department may establish less frequent sampling requirements for point sources that produce an effluent that does not exhibit high variability and consistently complies with the applicable effluent limit; and

C. Sludge sampling will be established in the permit.

2. Sampling frequency shall be representative of the discharge during the period the sampling covers (daily, weekly, monthly, seasonally, etc.).

3. Sample types shall be as follows:

A. Samples collected from lagoons may be grab samples;

B. Samples collected from mechanical plants shall be twenty-four (24)-hour composite samples, unless otherwise specified in the operating permit; and

C. Sludge samples shall be a grab sample unless otherwise specified in the operating permit.

4. The monitoring frequency and sample types stated in paragraphs (5)(B)1. through 3. of this rule are minimum requirements. The permit writer shall establish monitoring frequencies and sampling types to fulfill the site-specific informational needs of the department.

(6) Effluent Limitations for Special Streams.

(A) Limits for Outstanding National Resource Waters as listed in Table D of 10 CSR 20-7.031 and Drainages Thereto.

1. In addition to the requirements of section (9) of this rule, the following limitations represent the maximum amount of pollutants which may be discharged from any point source, water contaminant source, or wastewater treatment facility to waters included in this section.

2. Discharges from wastewater treatment facilities, which receive primarily domestic waste, or from POTWs are limited as follows:

A. New releases from any source are prohibited;

B. Discharges from sources that existed before June 29, 1974, or if additional stream segments are placed in this section, discharges that were permitted at the time of the designation will be allowed.

3. Industrial, agricultural, and other non-domestic contaminant sources, point sources, or wastewater treatment facilities which are not included under subparagraph (6)(A)2.B. of this rule shall not be allowed to discharge. Agrichemical facilities shall be designed and constructed so that all bulk liquid pesticide nonmobile storage containers and all bulk liquid fertilizer nonmobile storage containers are located within a secondary containment facility. Dry bulk pesticides and dry bulk fertilizers shall be stored in a building so that they are protected from the weather. The floors of the buildings shall be constructed of an approved design and material(s). At an agrichemical facility, all transferring, loading, unloading, mixing, and repackaging of bulk agrichemicals shall be conducted in an operational area. All precipitation collected in the operational containment area or secondary containment area as well as process generated wastewater shall be stored and disposed of in a no-discharge manner.

4. Monitoring requirements.

A. The department will develop a wastewater and sludge sampling program based on design flow that will require, at a minimum, one (1) wastewater sample per year for each twenty-five thousand (25,000) gpd of effluent, or fraction thereof, except that—

(I) Point sources that discharge less than five thousand (5,000) gpd may only be required to submit an annual report;

(II) Point sources that discharge more than one point three (1.3) mgd will be required at a minimum to collect fifty-two (52) wastewater samples per year. The department may establish less frequent sampling requirements for point sources that produce an effluent that does not exhibit high variability and consistently complies with the applicable effluent limit;

(III) Sludge sampling will be established in the permit.

B. Sampling frequency shall be representative of the discharge during the period the sampling covers (daily, weekly, monthly, seasonally, etc.).

C. Sample types shall be as follows:

(I) Samples collected from lagoons may be grab samples;

(II) Samples collected from mechanical plants shall be twenty-four (24)-hour composite samples, unless otherwise specified in the operating permit; and

(III) Sludge samples shall be a grab sample unless otherwise specified in the operating permit.

D. The monitoring frequency and sample types stated in subparagraphs (6)(A)4.A. through C. of this rule are minimum requirements. The permit writer shall establish monitoring frequencies and sampling types to fulfill the site-specific informational needs of the department.

(B) Limits for Outstanding State Resource Waters as listed in Table E of 10 CSR 20-7.031.

1. Discharges shall not cause the current water quality in the streams to be lowered.

2. Discharges will be permitted as long as the requirements of paragraph (6)(B)1. of this rule are met and the limitations in section (8) of this rule are not exceeded.

(7) Effluent Limitations for Subsurface Waters.

(A) No person shall release any water into aquifers, store or dispose of water in a way which causes or permits it to enter aquifers either directly or indirectly unless it meets the requirements of section (9) of this rule and it meets the appropriate groundwater protection criteria set in 10 CSR 20-7.031, Table A at a point ten feet (10') under the release point, or other compliance point based on site specific considerations, except as provided in subsections (7)(E) and (F) of this rule. The permit writer shall review the complete application and other data to determine which parameter to include in the permit.

(B) No wastewater shall be introduced into sinkholes, caves, fissures, or other openings in the ground which do or are reasonably certain to drain into aquifers except as provided in section (4) of this rule.

(C) All abandoned wells and test holes shall be properly plugged or sealed to prevent pollution of subsurface waters, as per the requirements of the department.

(D) Where any wastewater treatment facility or any water contaminant source or point source incorporates the use of land treatment systems which allows or can reasonably be expected to allow wastewater effluents to reach the aquifer. Compliance with subsection



(7)(A) of this rule shall be determined by a site-specific monitoring plan.

(E) The effluent limitations specified in subsection (7)(A) of this rule shall not apply to facilities designed and constructed to meet department design criteria provided these designs have been reviewed and approved by the department. The department has the right to require monitoring, reporting, public notice, and other information as deemed appropriate. This exemption may be revoked by the department should any monitoring indicate an adverse effect on a beneficial water use or if the numeric criteria in the Water Quality Standards are being exceeded.

(F) Any person not included in subsection (7)(E) of this rule who releases, stores, or disposes of water in a manner which results in releases of water to an aquifer having concentrations in excess of one (1) or more parameter limitations provided in subsection (7)(A) of this rule may be allowed to resample for purposes of verification of the excess. At their discretion, persons may demonstrate, at the direction of the department, that the impact on the water quality in the aquifer is negligible on the beneficial uses. The demonstration shall consider, at a minimum, the following factors:

1. Site geology;
2. Site geohydrology;
3. Existing and potential water uses;
4. Existing surface water and groundwater quality;
5. Characteristics of wastes or wastewater contained in facilities; and
6. Other items as may be required by the department to assess the proposal.

A. Demonstrations conducted under 10 CSR 25-18.010 shall be reviewed by the department in accordance with such rules. If the demonstrations show that the impact on groundwater quality will not result in an unreasonable risk to human health or the environment, alternate effluent limitations will be established by the department.

B. All other demonstrations shall be reviewed by the department. If the demonstrations show that the impact on groundwater quality will not result in an unreasonable risk to human health or the environment, alternate effluent limitation(s) will be proposed by the department and presented to the Clean Water Commission for approval. The Clean Water Commission has the right to require monitoring, reporting, public notice, and other information as deemed appropriate in the approval of the alternate limitation for one (1) or more parameters from subsection (7)(A) of this rule. The Clean Water Commission may hold a public hearing to secure

public comment prior to final action on an alternate limitation.

C. No alternate limitations will be granted which would impair beneficial uses of the aquifer or threaten human health or the environment.

D. Alternate limitations may be revoked by the department should any monitoring indicate an adverse effect on a beneficial water use or violations of the alternate limitation.

(8) Effluent Limitations for All Waters, Except Those in Paragraphs (1)(B)1.-6. of This Rule. In addition to the requirements of section (9) of this rule, the following limitations represent the maximum amount of pollutants which may be discharged from any point source, water contaminant source, or wastewater treatment facility.

(A) Discharges from wastewater treatment facilities which receive primarily domestic waste or POTWs shall undergo treatment sufficient to conform to the following limitations:

1. BOD₅ and TSS equal to or less than a monthly average of thirty milligrams per liter (30 mg/L) and a weekly average of forty-five milligrams per liter (45 mg/L);
2. pH shall be maintained in the range from six to nine (6-9) standard units;
3. The limitations of paragraphs (8)(A)1. and 2. of this rule will be effective unless an alternate limitation will not cause violations of the Water Quality Standards or impairment of the uses in the standards. When an Antidegradation Review has been completed for new or expanded discharges, the following alternate limitation may also be allowed:

A. If the facility is a wastewater lagoon, the TSS shall be equal to or less than a monthly average of eighty milligrams per liter (80 mg/L) and a weekly average of one hundred twenty milligrams per liter (120 mg/L) and the pH shall be maintained above six (6.0) and the BOD₅ shall be equal to or less than a monthly average of forty-five milligrams per liter (45 mg/L) and a weekly average of sixty-five milligrams per liter (65 mg/L);

B. If the facility is a trickling filter plant, the BOD₅ and TSS shall be equal to or less than a monthly average of forty-five milligrams per liter (45 mg/L) and a weekly average of sixty-five milligrams per liter (65 mg/L);

C. Where the use of effluent limitations set forth in section (8) of this rule is known or expected to produce an effluent that will endanger water quality, the department will set specific effluent limitations for indi-

vidual dischargers to protect the water quality of the receiving streams. When a waste load allocation study is conducted for a stream or stream segment, all permits for discharges in the study area shall be modified to reflect the limits established in the waste load allocation study in accordance with any applicable compliance schedule; and

D. The department may require more stringent limitations than authorized in paragraphs (8)(A)1. and 2. and subparagraphs (8)(A)3.A., B., and C. of this rule under the following conditions:

(I) If the facility is an existing facility, the department may set the BOD₅ and TSS limits based upon an analysis of the past performance, rounded up to the next five milligrams per liter (5 mg/L) range; and

(II) If the facility is a new facility the department may set the BOD₅ and TSS limits based upon the design capabilities of the plant considering geographical and climatic conditions:

(a) A design capability study has been conducted for new lagoon systems. The study reflects that the effluent limitations should be BOD₅ equal to or less than a monthly average of forty-five milligrams per liter (45 mg/L) and a weekly average of sixty-five milligrams per liter (65 mg/L) and TSS equal to or less than a monthly average of seventy milligrams per liter (70 mg/L) and a weekly average of one hundred ten milligrams per liter (110 mg/L); or

(b) A design capability study has been conducted for new trickling filter systems and the study reflects that the effluent limitations should be BOD₅ and TSS equal to or less than a monthly average of forty milligrams per liter (40 mg/L) and a weekly average of sixty milligrams per liter (60 mg/L);

4. Sludges removed in the treatment process shall not be discharged. Sludges shall be routinely removed from the wastewater treatment facility and disposed of or used in accordance with a sludge management practice approved by the department; and

5. When the wastewater treatment process causes nitrification which affects the BOD₅ reading, the permittee can petition the department to substitute carbonaceous BOD₅ in lieu of regular BOD₅ testing. If the department concurs that nitrification is occurring, the department will set a carbonaceous BOD₅ at five milligrams per liter (5 mg/L) less than the regular BOD₅ in the operating permit.

(B) Monitoring Requirements.

1. The department will develop a wastewater and sludge sampling program based on design flow that will require, at a



minimum, one (1) wastewater sample per year for each fifty thousand (50,000) gpd of effluent, or fraction thereof, except that—

A. Point sources that discharge less than twenty-five thousand (25,000) gpd may only be required to submit an annual report;

B. The department may establish less frequent sampling requirements for point sources that produce an effluent that does not exhibit high variability and consistently complies with the applicable effluent limit; and

C. Sludge sampling will be established in the permit.

2. Sampling frequency shall be representative of the discharge during the period the sampling covers (daily, weekly, monthly, seasonally, etc.).

3. Sample types shall be as follows:

A. Samples collected from lagoons may be grab samples;

B. Samples collected from mechanical plants shall be twenty-four (24)-hour composite samples, unless otherwise specified in the operating permit; and

C. Sludge samples shall be a grab sample unless otherwise specified in the operating permit.

4. The monitoring frequency and sample types stated in paragraphs (8)(B)1. through 3. of this rule are minimum requirements. The permit writer shall establish monitoring frequencies and sampling types to fulfill the site-specific informational needs of the department.

(9) General Conditions.

(A) Establishing Effluent Limitations. Unless a formal variance from water quality standards have been approved by the Clean Water Commission and the U.S. Environmental Protection Agency, operating permits as required under 10 CSR 20-6.010(5) shall include, if applicable, the most protective limits set forth as follows:

1. Technology-based effluent limits and standards based on specific requirements under sections (2) through (8) of this rule;

2. Water quality-based effluent limits based on a waste load allocation in accordance with federal regulations (40 CFR 122.44(d)(1)), which would address pollutants that have a reasonable potential to cause or contribute to an excursion above Water Quality Standards established in 10 CSR 20-7.031.

A. Local effluent and receiving water data may be used to develop site specific effluent limits provided the department determines that this data is representative and 10 CSR 7.031 provides for their development;

B. Water quality-based effluent limitations incorporating mixing zones and zones

of initial dilution as provided for in 10 CSR 20-7.031(5)(A)4.B. may be based on stream flows other than critical low-flow conditions, if the following conditions are met:

(I) The limits are protective of critical low-flow conditions, as well as higher flow conditions; and

(II) The permit shall require in-stream flow measurements and methods to determine compliance;

3. Effluent limit guidelines or standards that have been federally promulgated under Sections 301, 304, 306, 307, 318, and 405 of the Clean Water Act and case-by-case determinations of technology-based effluent limitations under section 402(a)(1) of the Clean Water Act;

4. Effluent limits prescribed for pollutants under a TMDL, as required under Section 303(d)(1)(C) of the Clean Water Act, necessary to achieve water quality standards, including permit limits in lieu of a TMDL. TMDL waste load allocations shall be placed in permits at renewal, and in subsequent renewals as needed. Permits may include schedules of compliance and, if developed, follow TMDL implementation plans or other flexibilities so long as they are allowed by federal regulation. The department may reopen existing permits to implement TMDL requirements;

5. Effluent limits that are developed through the antidegradation review process, provided there is reasonable potential to exceed these limits;

6. Effluent limits prescribed for stormwater discharges as required under 10 CSR 20-6.200 Storm Water Regulations; and

7. Effluent Limits that are required as a result of legal agreements between dischargers and the department or the Clean Water Commission, or as otherwise required or allowed by law.

(B) Bacteria and Statewide Nutrient Limits. Operating Permits as required under 10 CSR 20-6.010(5) shall include, if applicable, the following bacteria and nutrient limits:

1. Bacteria. The following water quality *Escherichia coli* (*E. coli*) discharge limits apply:

A. Discharges to stream segments designated in Table H of 10 CSR 20-7.031 for whole body contact recreation and secondary contact recreation shall not exceed the water quality *E. coli* counts established in subsection (5)(C) of 10 CSR 20-7.031;

B. Discharges to lakes designated as whole body contact recreational or secondary contact recreational in Table G of 10 CSR 20-7.031 shall not exceed the water quality *E. coli* counts established in subsection (5)(C) of 10 CSR 20-7.031;

C. Discharges to privately-owned lakes classified as L3, as defined in subsection (1)(F) of 10 CSR 20-7.031, that are designated as whole body contact recreational or secondary contact recreational in Table G of 10 CSR 20-7.031 shall not exceed the water quality *E. coli* counts established in subsection (5)(C) of 10 CSR 20-7.031. Discharges include releases into streams one-half (1/2) stream mile (.80 km) before the stream enters the lake as measured to its conservation pool;

D. Discharges located within two (2) miles upstream of stream segments or lakes designated for whole body contact recreational or secondary contact recreational in Tables H and G of 10 CSR 20-7.031 shall not exceed the water quality *E. coli* counts established in subsection (5)(C) of 10 CSR 20-7.031 for the receiving stream segment or lake designated for those uses;

E. Short-term *E. coli* limits. During the recreation season, discharges to waters designated for whole body contact "A" as defined in part (1)(C)2.A.(I) of 10 CSR 20-7.031 shall be limited to six hundred thirty (630) colony forming units per one hundred (100) milliliters (ml) expressed as a weekly geometric mean for POTWs and as a daily maximum for non-POTWs. During the recreation season, discharges to waters designated for whole body contact "B" as defined in part (1)(C)2.A.(II) of 10 CSR 20-7.031 shall be limited to one thousand thirty (1,030) colony forming units per one hundred (100) ml expressed as a weekly geometric mean for POTWs and as a daily maximum for non-POTWs. During the recreation season, discharges to waters designated for secondary contact recreational as defined in paragraph (1)(C)9. of 10 CSR 20-7.031 shall be limited to one thousand one hundred thirty-four (1,134) colony forming units per one hundred (100) ml expressed as a weekly geometric mean for POTWs and as a daily maximum for non-POTWs. For the entire calendar year, discharges to waters that are defined by paragraph (1)(B)3. of this rule as losing streams shall be limited to one hundred twenty-six (126) colony forming units per one hundred (100) ml expressed as a daily maximum;

F. As an alternative to the limits prescribed in subparagraphs (9)(B)1.A. through E. of this rule, the department may allow permit applicants to conduct a study to develop *E. coli* limits that reflect pathogen decay. Prior to conducting this study applicants shall submit a quality assurance project plan for approval prior to the study, and submit all findings as part of their permit application; and

G. Notwithstanding the bacteria limits prescribed in paragraphs (9)(1)A. through



F. of this rule, discharges to losing streams shall be considered in compliance so long as no more than ten (10) percent of samples exceed one hundred twenty-six (126) colony forming units per one hundred (100) ml daily maximum;

2. Nutrients. Reserved for Statewide Nutrient Effluent Limits.

(C) Schedules of Compliance.

1. Compliance with new or revised National Pollutant Discharge Elimination System (NPDES) or Missouri operating permit limitations shall be achieved and in accordance with the federal regulation 40 CFR Part 122.47, "Schedules of Compliance," May 15, 2000, as published by the Office of the Federal Register, National Archives and Records Administration, Superintendent of Documents, Pittsburgh, PA 15250-7954, which is hereby incorporated by reference and does not include later amendments or additions.

2. If any permit allows a time for achieving final compliance from the date of permit issuance, the schedule of compliance in the permit shall set forth interim requirements and the dates for their achievement. The time between interim dates shall not exceed one (1) year, except that in the case of a schedule for compliance with standards for sewage sludge use and disposal, the time between interim dates shall not exceed six (6) months.

3. Within fourteen (14) days following each interim date and the final date of compliance, the permittee shall provide the department with written notice of the permittee's compliance or noncompliance with the interim or final requirement for the dates.

4. A compliance schedule may be modified if the department determines good cause exists such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonable remedy. Applicants may request a modification by providing appropriate justification. In no case shall the compliance schedule be modified to extend beyond an applicable statutory deadline.

(D) Monitoring, Analysis, and Reporting.

1. All construction and operating permit holders shall submit reports at intervals established by the permit or at any other reasonable intervals required by the department. The monitoring and analytical schedule shall be as established by the department in the operating permit.

2. The analytical and sampling methods used must conform to the following reference methods unless alternates are approved by the department:

A. *Standard Methods for the Exami-*

nation of Waters and Wastewaters (14, 15, 16, 17, 18, 19, 20, and 21st Edition), published by the Water Environment Federation, 601 Wythe Street, Alexandria, VA 22314;

B. *Water Testing Standards, Vol. II.01 and II.02*, published by American Society for Testing and Materials, West Conshohocken, PA 19428;

C. *Methods for Chemical Analysis of Water and Wastes* (EPA- 600/4-79-020), published by the Environmental Protection Agency, Water Quality Office, Analytical Quality Control Laboratory, 1014 Broadway, Cincinnati, OH 54202; and

D. *NPDES Compliance Sampling Inspection Manual*, (EPA-305-X-04-001), published by Environmental Protection Agency, Office of Enforcement and Compliance Assurance 1200 Pennsylvania Avenue, N.W., Washington, DC 20460 (July 2004).

3. Sampling and analysis by the department to determine violations of this regulation will be conducted in accordance with the methods listed in paragraph (9)(D)2. of this rule or any other approved by the department. Violations may be also determined by review of the permittee's self-monitoring reports. Analysis conducted by the permittee or his/her laboratory shall be conducted in such a way that the precision and accuracy of the analyzed results can be determined.

4. If, for any reason, the permittee does not comply with or will be unable to comply with any discharge limitations or standards specified in the permit, the permittee shall provide the department with the following information, with the next discharge monitoring report as required under subsection (9)(D) of this rule:

A. A description of the discharge and cause of noncompliance;

B. The period of noncompliance, including exact dates and times and/or the anticipated time when the discharge will return to compliance; and

C. The steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

5. In the case of any discharge subject to any applicable toxic pollutant effluent standard under Section 307(a) of the federal Clean Water Act, the information required by paragraph (9)(D)4. of this rule regarding a violation of this standard shall be provided within twenty-four (24) hours from the time the owner or operator of the water contaminant source, point source, or wastewater treatment facility becomes aware of the violation or potential violation. This information may be provided via an electronic web-based system developed by the department, provided it is available. If this information is pro-

vided orally, a written submission covering these points shall be provided within five (5) working days of the time the owner or operator of the water contaminant source, point source, or wastewater treatment facility becomes aware of the violation.

6. Bacteria Monitoring for Disinfection.

A. For systems that have a design capacity of greater than one hundred thousand (100,000) gpd, a minimum of one (1) sample shall be collected for *E. coli* analysis each calendar week during the recreational season from April 1 through October 31. Compliance with the *E. coli* water quality standard established in subsection (5)(C) of 10 CSR 20-7.031 shall be determined each calendar month by calculating the geometric mean of all of the samples collected each calendar month. Compliance with the short-term *E. coli* limits established in subparagraph (9)(B)1.E. of this rule shall also be determined.

B. For systems that discharge to stream segments that are defined by paragraph (1)(B)3. as losing streams and have a design capacity of greater than one hundred thousand (100,000) gpd, a minimum of one (1) sample shall be collected for *E. coli* analysis each calendar week all year. Compliance with the *E. coli* water quality standard established in subsection (5)(C) of 10 CSR 20-7.031 and with the short term *E. coli* limits established in subparagraph (9)(B)1.E. of this rule shall also be determined.

C. For systems that have a design capacity of one hundred thousand (100,000) gpd or less, the sampling frequency for *E. coli* analysis shall be in accordance with the wastewater and sludge sampling program based on the design flow which is dependent upon the receiving water category as listed in subsection (1)(B) of this rule. Compliance with the *E. coli* water quality standard established in subsection (5)(C) of 10 CSR 20-7.031 shall be determined each calendar month by calculating the geometric mean of all of the samples collected each calendar month. Compliance with the short-term *E. coli* limits established in subparagraph (9)(B)1.E. of this rule shall also be determined.

7. Statewide Monitoring for Nutrients. Point sources that have the design capacity of greater than one hundred thousand (100,000) gpd that typically discharge nitrogen and phosphorus shall collect and analyze a minimum of one (1) effluent sample each calendar quarter for one (1) permit cycle or up to (5) five years if the first permit term is less than five (5) years. The samples shall be analyzed for total nitrogen and total phosphorus using EPA approved test methods. This provision shall



not limit the department from imposing ongoing or more frequent monitoring in permits that impose effluent limits for total nitrogen or total phosphorus or in situations in which monitoring is appropriate to ensure compliance with water quality standards. The quarterly monitoring frequency for total phosphorus does not apply to dischargers that are subject to the specific lake limits and monitoring requirement specified under subsections (3)(E) and (F) of this rule.

(E) Dilution Water. Dilution of treated wastewater with cooling water or other less contaminated water to lower the effluent concentration to limits required by an effluent regulation of the Clean Water Law shall not be an acceptable means of treatment.

(F) Compliance with New Source Performance Standards.

1. Except as provided in paragraph (9)(F)2. of this rule, any new water contaminant source, point source, or wastewater treatment facility on which construction commenced after October 18, 1972, or any new source, which meets the applicable promulgated new source performance standards before the commencement of discharge, shall not be subject to any more stringent new source performance standards or to any more stringent technology-based standards under subsection 301(b)(2) of the federal Clean Water Act for the shortest of the following periods:

A. Ten (10) years from the date that construction is completed;

B. Ten (10) years from the date the source begins to discharge process or other nonconstruction related wastewater; or

C. The period of depreciation or amortization of the facility for the purposes of section 167 or 169 (or both) of the *Internal Revenue Code* of 1954.

2. The protection from more stringent standards of performance afforded by paragraph (9)(F)1. of this rule does not apply to—

A. Additional or more stringent permit conditions which are not technology based, for example, conditions based on water quality standards or effluent standards or prohibitions under Section 307(a) of the federal Clean Water Act; and

B. Additional permit conditions controlling pollutants listed as toxic under Section 307(a) of the federal Clean Water Act or as hazardous substances under Section 311 of the federal Clean Water Act and which are not controlled by new source performance standards. This exclusion includes permit conditions controlling pollutants other than those identified as hazardous where control of those other pollutants has been specifically identified as the method to control the hazardous pollutant.

(G) Bypass. Bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending. Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. Blending is the practice of diverting wet-weather flows around any treatment unit and recombining those flows within the treatment facility, while providing primary and secondary or biological treatment up to the available capacity, consistent with all applicable effluent limits and conditions.

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (9)(G)3. and 4. of this rule.

2. Notice.

A. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice to the department, if possible at least ten (10) days before the date of the bypass.

B. Unanticipated bypass. The permittee shall notify the department by telephone within twenty-four (24) hours and follow with a written report within five (5) days from the time the permittee becomes aware of the circumstances of all bypasses or shutdowns that result in a violation of permit limits or conditions and which may endanger human health or the environment. The twenty-four (24)-hour and five (5) day reports may be provided via an electronic web-based system developed by the department, provided it is available, or by facsimile machine. POTWs that bypass during storm water inflow and infiltration events need only report on their discharge monitoring reports so long as the bypass does not result in violations of permit limits or conditions or endanger human health or the environment.

3. Prohibition of bypass. Bypass is prohibited, and the department may take enforcement action against a permittee for bypass, unless:

A. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

B. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated

wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

C. The permittee submitted notices as required under paragraph (9)(G)2. of this rule.

4. The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three (3) conditions listed in paragraph (9)(G)3. of this rule.

(H) Sludge facilities shall meet the applicable control technology for sewage sludge treatment, use, and disposal as published by the EPA in 40 CFR 503 and applicable state standards and limitations published in 10 CSR 20 and 10 CSR 80. Where there are no standards available or applicable, or when more stringent standards are appropriate to protect human health and the environment, the department shall set specific limitations in permits on a case-by-case basis using best professional judgment.

(I) Industrial, agricultural, and other non-domestic water contaminant sources, point sources, or wastewater treatment facilities which are not included under subsections (2)(B) or (8)(B) of this rule—

1. These facilities shall meet the applicable control technology currently effective as published by the EPA in 40 CFR 405-471. Where there are no standards available or applicable, the department shall set specific parameter limitations using best professional judgment. The pH shall be maintained in the range from six to nine (6-9) standard units, except that discharges of uncontaminated cooling water and water treatment plant effluent may exceed nine (9) standard units, but may not exceed ten and one-half (10.5) standard units, if it can be demonstrated that the pH will not exceed nine (9) standard units beyond the regulatory mixing zone; and

2. Agrichemical facilities shall be designed and constructed so that all bulk liquid pesticide nonmobile storage containers and all bulk liquid fertilizer nonmobile storage containers are located within a secondary containment facility. Dry bulk pesticides and dry bulk fertilizers shall be stored in a building so that they are protected from the weather. The floors of the buildings shall be constructed of an approved design and material(s). At an agrichemical facility, the following procedures shall be conducted in an operational area: all transferring, loading, unloading, mixing, and repackaging of bulk



agricultural. All precipitation collected in the operational containment area or secondary containment area as well as process generated wastewater shall be stored and disposed of in a no-discharge manner or treated to meet the applicable control technology referenced in paragraph (9)(I)1. of this rule.

(J) Implementation Schedule for Protection of Whole Body Contact and Secondary Contact Recreation.

1. For discharges to water bodies designated for whole body contact and secondary contact recreational use prior to July 1, 2012, in 10 CSR 20-7.031, permits shall insure compliance with effluent limits to protect whole body contact and secondary contact recreation by no later than December 31, 2013, unless the permittee presents an evaluation sufficient to show that disinfection is not required to protect one (1) or both designated recreational uses, or a UAA demonstrates that one (1) or both designated recreational uses are not attainable in the classified waters receiving the effluent.

2. For discharges to water bodies designated for whole body contact and secondary contact recreational use after June 30, 2012, in 10 CSR 20-7.031, permits shall include schedules of compliance to meet bacteria limits in accordance with subsection (9)(C) of this rule.

(K) Temporary Suspension of Accountability for Bacteria Standards during Wet Weather. The accountability for bacteria standards may be temporarily suspended for specific discharges when conditions contained in paragraphs (9)(K)1. through 3. of this rule are met.

1. No existing recreational uses downstream of the discharge will be impacted during the period of suspension as confirmed through a water quality review for reasonable potential for downstream impacts and a UAA performed in accordance with the *Missouri Recreational Use Attainability Analysis Protocol* approved by the Missouri Clean Water Commission.

2. The period of suspension must be restricted to the defined wet weather event that corresponds to the period when recreational uses are unattainable. The period must be determinable at any time by the discharger and the general public (such as from stream depth or flow readings or other stream conditions on which publicly accessible records are kept).

3. The suspension shall be subject to public review and comment, Missouri Clean Water Commission approval, and EPA approval before becoming effective and shall be contained as a condition in a discharge permit or other written document developed

through public participation.

(L) Whole Effluent Toxicity (WET) Test. The following are permit requirements for acute and chronic WET tests:

1. WET tests are required under 10 CSR 20-6.010(8)(A)4. and are to be conducted according to the methods prescribed in 40 CFR 136.3;

2. Test Types.

A. Acute WET tests shall be a multiple dilution series, static, non-renewal test to determine the degree at which acute forty-eight to ninety-six hour (48–96 hour) exposure to the effluent is acutely toxic to aquatic life expressed in species survival.

B. Chronic WET test shall be a multiple dilution series, static, renewal test to determine the degree at which chronic (sub lethal) exposure to the effluent is toxic to aquatic life or affects an alternative endpoint such as species reproduction and/or growth. Duration of chronic WET tests shall be established according to 40 CFR 136.3 Identification of test procedures, promulgated as of July 1, 2011, is hereby incorporated by reference in this rule, as published by the Office of the Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408. This rule does not incorporate any subsequent amendments or additions;

3. Applicability. WET test type and frequency shall be determined and expressed in permits by the department. At permit issuance or reissuance, the department will use valid and representative data to establish on a case-by-case basis, whether an existing discharge causes, has the reasonable potential to cause, or contributes to an excursion from the narrative water quality criteria. Where the department concludes that a discharge has the reasonable potential to contribute to an excursion from the narrative water quality criteria, as established in 10 CSR 20-7.031 the permit will include WET limits. If the department determines the facility has no reasonable potential to violate water quality standards, WET testing may be removed, or if more information is required, WET testing may be retained at a reduced frequency. WET test applicability for NPDES permits shall be fully addressed in the permit factsheet; and

4. Specifications.

A. A dilution series shall be established in the permit for WET test. The dilution series shall be a set of proportional effluent dilutions based on an Allowable Effluent Concentration (AEC).

B. All WET tests shall be performed with *Pimephales promelas* (a fathead minnow) and *Ceriodaphnia dubia* (a water flea), except facilities which discharge to receiving

streams designated as cold-water fisheries. Facilities which discharge to receiving streams designated as cold-water fisheries may be required to perform WET tests using *Oncorhynchus mykiss* (rainbow trout) instead of the fathead minnow. Other test species for which test methods are provided in 40 CFR 136.3 may be approved by the department on a case-by-case basis provided the species are appropriately sensitive and representative. Alternative species (not included in 40 CFR 136.3) shall be approved in accordance with the procedures in 40 CFR 136.4. Application for alternate test procedures, promulgated as of July 1, 2011, is hereby incorporated by reference in this rule, as published by the Office of the Federal Register, U.S. National Archives and Records, 700 Pennsylvania Avenue NW, Washington, DC 20408. This rule does not incorporate any subsequent amendments or additions.

C. A Toxic Unit (TU) water quality based limit shall be established in the permit for WET test where the department concludes that a discharge has the reasonable potential to cause or contribute to an excursion from the narrative water quality criteria as established in 10 CSR 20-7.031(4)(D). The TU limit shall be determined in accordance with 40 CFR 122.44(d)(1)(v) and utilizing the methods established in Technical Support Document For Water Quality-based Toxics Control (March 1991, EPA, EPA/505/2-90-001) and documented in the factsheet. Exceedance of a TU limit shall be a WET test failure.

D. Upon completion of a WET test the lab report and department form as referenced in the permit shall be submitted by the permittee to the department within the timeframe established by the permit.

(10) Control of Combined Sewer Overflows (CSOs). The permitting and control of CSOs shall conform to EPA's CSO Control Policy, EPA Number 830/B-94-001 (published by EPA April 19, 1994, at 59 Fed. Reg. 18688) as referenced by Section 402 (q) of the Clean Water Act, 33 USC 1342(q). The CSO Control Policy is hereby incorporated by reference, without any later amendments or additions. This document is available by writing to U.S. Environmental Protection Agency, Office of Water Resource Center, Mail Code RC-4100T, 1200 Pennsylvania Avenue NW, Washington, DC 20460 or upon request from the Department of Natural Resources, Water Protection Program, Water Pollution Control Branch, PO Box 176, Jefferson City, MO 65102-0176. Effluent monitoring commitments for CSOs shall be addressed in the long term control plans required under EPA's CSO Control Policy.



AUTHORITY: section 644.026, RSMo Supp. 2013.* Original rule filed June 6, 1974, effective June 16, 1974. Amended: Filed April 1, 1975, effective April 11, 1975. Rescinded: Filed Oct. 16, 1979, effective July 11, 1980. Readopted: Filed Feb. 4, 1980, effective July 11, 1980. Rescinded and readopted: Filed Nov. 10, 1982, effective May 12, 1983. Amended: Filed Sept. 11, 1984, effective March 12, 1985. Amended: Filed July 25, 1985, effective Dec. 26, 1985. Amended: Filed Feb. 1, 1988, effective June 13, 1988. Amended: Filed Sept. 13, 1988, effective Feb. 14, 1989. Amended: Filed July 15, 1991, effective Jan. 13, 1992. Amended: Filed Sept. 2, 1993, effective May 9, 1994. Amended: Filed March 1, 1999, effective Nov. 30, 1999. Amended: Filed Dec. 30, 1999, effective Sept. 30, 2000. Amended: Filed March 31, 2005, effective Dec. 31, 2005. Amended: Filed Sept. 28, 2009, effective June 30, 2010. Amended: Filed May 15, 2013, effective Feb. 28, 2014.

*Original authority: 644.026, RSMo 1972, amended 1973, 1987, 1993, 1995, 2000, 2012.

10 CSR 20-7.020 Effluent Regulations (Rescinded July 10, 1980)

AUTHORITY: section 204.026, RSMo 1978. Original rule filed June 6, 1974, effective June 16, 1974. Amended: Filed April 1, 1975, effective April 11, 1975. Rescinded: Filed Oct. 12, 1979, effective July 10, 1980.

10 CSR 20-7.030 Water Quality Standards (Rescinded December 11, 1977)

AUTHORITY: sections 204.021 and 204.026, RSMo Supp. 1973. Rescinded: effective Dec. 11, 1977.

10 CSR 20-7.031 Water Quality Standards

PURPOSE: This rule identifies uses of waters of the state, criteria to protect those uses, and defines the antidegradation policy. It is developed in response to the Missouri Clean Water Law and the federal Clean Water Act, Section 303(c)(1) and (2), which requires that state water quality standards be reviewed at least once every three (3) years. These revisions are pursuant to the national goal of protection of fish, shellfish, and wildlife and recreation in and on the water as outlined in Section 101(a)(2) of the Act.

PUBLISHER'S NOTE: The secretary of state has determined that the publication of the

entire text of the material which is incorporated by reference as a portion of this rule would be unduly cumbersome or expensive. This material as incorporated by reference in this rule shall be maintained by the agency at its headquarters and shall be made available to the public for inspection and copying at no more than the actual cost of reproduction. This note applies only to the reference material. The entire text of the rule is printed here.

(1) Definitions.

(A) Acute toxicity—Conditions producing adverse effects or lethality on aquatic life following short-term exposure. The acute criteria in Tables A and B are maximum concentrations which protect against acutely toxic conditions. Acute toxicity is also indicated by exceedence of whole-effluent toxicity (WET) test conditions of paragraph (4)(I)2. For substances not listed in Table A or B, three-tenths (0.3) of the median lethal concentration, or the no observed acute effect concentration for representative species, may be used to determine absence of acute toxicity.

(B) Aquifer—A subsurface water-bearing bed or stratum which stores or transmits water in recoverable quantities that is currently being used or could be used as a water source for private or public use. It does not include water in the vadose zone.

(C) Designated uses. Uses specified for each water body whether or not they are being attained. Uses are designated according to section (2) of this rule and include, but are not limited to—

1. Protection and propagation of fish, shellfish and wildlife. Streams will be designated to one of the following aquatic habitat protection uses based on watershed size, scale within the stream network and other hydrological and physical data. Lakes and reservoirs will be designated to one of the following aquatic habitat protection uses based on limnological characteristics (such as temperature) and biological assemblages.

A. Warm Water Habitat (WWH)—Waters in which naturally-occurring water quality and habitat conditions allow the maintenance of a wide variety of warm-water biota—

- (I) Warm water habitat (Great River);
(II) Warm water habitat (Large River);
(III) Warm water habitat (Small River);
(IV) Warm water habitat (Creek);
(V) Warm water habitat (Headwater); and

(VI) Warm water habitat (Lake or reservoir).

B. Cool Water Habitat (CLH)—Waters in which naturally-occurring water quality and habitat conditions allow the maintenance of a wide variety of cool-water biota. These waters can support a sensitive, high-quality sport fishery (i.e., smallmouth bass and rock bass)—

- (I) Cool water habitat (Large River);
(II) Cool water habitat (Small River);
(III) Cool water habitat (Creek);
(IV) Cool water habitat (Headwater); and
(V) Cool water habitat (Lake or reservoir).

C. Cold Water Habitat (CDH)—Waters in which naturally-occurring water quality and habitat conditions allow the maintenance of a wide variety of cold-water biota. These waters can support a naturally reproducing or stocked trout fishery and populations of other cold-water species—

- (I) Cold water habitat (Large River);
(II) Cold water habitat (Small River);
(III) Cold water habitat (Creek);
(IV) Cold water habitat (Headwater); and
(V) Cold water habitat (Lake or reservoir).

D. Ephemeral Aquatic Habitat (EAH)—Waters having surface flow or pools in response to precipitation events or snow melt, but without permanent surface flow or permanent pools; naturally-occurring water quality and habitat conditions may allow the maintenance of a limited or transient community of aquatic biota.

E. Modified Aquatic Habitat (MAH)—Waters in which natural habitat conditions have been physically, chemically or biologically modified; habitat and resulting water quality conditions may prevent the maintenance of a wide variety or diversity of aquatic biota.

F. Limited Aquatic Habitat (LAH)—Waters in which natural habitat conditions have been substantially and irretrievably altered; habitat and resulting water quality conditions do not allow maintenance of aquatic biota, or if present, the community is of poor variety or diversity.

2. Recreation in and on the water. Assignment of these uses does not grant an individual the right to trespass.

A. Whole body contact recreation (WBC)—Activities involving direct human contact with waters of the state to the point of



complete body submergence. The water may be ingested accidentally and certain sensitive body organs, such as the eyes, ears, and the nose, will be exposed to the water. Although the water may be ingested accidentally, it is not intended to be used as a potable supply unless acceptable treatment is applied. Waters so designated are intended to be used for swimming, water skiing, or skin diving.

(I) Category A (WBC-A)—This category applies to waters that have been established by the property owner as public swimming areas welcoming access by the public for swimming purposes and waters with documented existing whole body contact recreational use(s) by the public. Examples of this category include, but are not limited to: public swimming beaches and property where whole body contact recreational activity is open to and accessible by the public through law or written permission of the landowner.

(II) Category B (WBC-B)—This category applies to waters designated for whole body contact recreation not contained within category A.

B. Secondary contact recreation (SCR)—Uses include fishing, wading, commercial and recreational boating, any limited contact incidental to shoreline activities, and activities in which users do not swim or float in the water. These recreational activities may result in contact with the water that is either incidental or accidental and the probability of ingesting appreciable quantities of water is minimal.

3. Human health protection (HHP)—Criteria to protect this use are based on the assumption of an average amount of fish consumed on a long-term basis. Protection of this use includes compliance with Food and Drug Administration (FDA) limits for fish tissue, maximum water concentrations corresponding to the 10^{-6} cancer risk level, and other human health fish consumption criteria.

4. Irrigation (IRR)—Application of water to cropland or directly to cultivated plants that may be used for human or livestock consumption. Occasional supplemental irrigation, rather than continuous irrigation, is assumed.

5. Livestock and wildlife protection (LWP)—Maintenance of conditions in waters to support health in livestock and wildlife.

6. Drinking water supply (DWS)—Maintenance of a raw water supply which will yield potable water after treatment by public water treatment facilities.

7. Industrial water supply (IND)—Water to support various industrial uses; since quality needs will vary by industry, no specific criteria are set in these standards.

8. Storm- and flood-water storage and attenuation (WSA)—Wetlands and other waters which serve as overflow and storage areas during flood or storm events slowly release water to downstream areas, thus lowering flood peaks and associated damage to life and property.

9. Habitat for resident and migratory wildlife species, including rare and endangered species (WHP)—Wetlands and other waters that provide essential breeding, nesting, feeding, and predator escape habitats for wildlife including waterfowl, birds, mammals, fish, amphibians, and reptiles.

10. Recreational, cultural, educational, scientific, and natural aesthetic values and uses (WRC)—Wetlands and other waters that serve as recreational sites for fishing, hunting, and observing wildlife; waters of historic or archaeological significance; waters which provide great diversity for nature observation, educational opportunities, and scientific study.

11. Hydrologic cycle maintenance (WHC)—Wetlands and other waters hydrologically connected to rivers and streams serve to maintain flow conditions during periods of drought. Waters that are connected hydrologically to the groundwater system recharge groundwater supplies and assume an important local or regional role in maintaining groundwater levels.

(D) Biocriteria—Numeric values or narrative expressions that describe the reference biological integrity of aquatic communities inhabiting waters that have been designated for aquatic-life protection.

(E) Chronic toxicity—Conditions producing adverse effects on aquatic life or wildlife following long-term exposure but having no readily observable effect over a short time period. Chronic numeric criteria in Tables A and B are maximum concentrations which protect against chronic toxicity; these values shall be considered four- (4-) day averages, with the exception of total ammonia as nitrogen which shall be considered a thirty- (30-) day average. Chronic toxicity is also indicated by exceedence of WET test conditions of subsection (5)(Q). For substances not listed in Table A or B, commonly used endpoints such as the no-observed effect concentration or inhibition concentration of representative species may be used to demonstrate absence of toxicity.

(F) Class—All waters listed in the Missouri Use Designation Dataset and in Table G and Table H of this rule shall have a hydrologic class. During normal flow periods, some rivers back water into tributaries which do not otherwise have a hydrologic class. These permanent backwater areas are consid-

ered to have the same hydrologic class as the water body into which the tributary flows.

1. Class L1—Lakes used primarily for public drinking water supply.

2. Class L2—Major reservoirs.

3. Class L3—Other lakes which are waters of the state. These include both public and private lakes. For effluent regulation purposes, publicly-owned L3 lakes are those for which a substantial portion of the surrounding lands are publicly owned or managed.

4. Class P—Streams that maintain permanent flow even in drought periods.

5. Class P1—Standing-water reaches of Class P streams.

6. Class C—Streams that may cease flow in dry periods but maintain permanent pools which support aquatic life.

7. Class E—Streams that do not maintain permanent surface flow or permanent pools, but have ephemeral surface flow or pools in response to precipitation events.

8. Class W—Wetlands that are waters of the state that meet the criteria in the *Corps of Engineers Wetlands Delineation Manual* (January 1987), and subsequent federal revisions and supplements. Class W waters do not include wetlands that are artificially created on dry land and maintained for the treatment of mine drainage, stormwater control, drainage associated with road construction, or industrial, municipal, or agricultural waste.

(G) Early life stages of fish—The pre-hatch embryonic period, the post-hatch free embryo or yolk-sac fry, and the larval period during which the organism feeds. Juvenile fish, which are anatomically rather similar to adults, are not considered an early life stage.

(H) Existing uses—Those uses actually attained in the water body on or after November 28, 1975, whether or not they are identified in the water quality standards.

(I) Ecoregion—Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. They are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components. By recognizing the spatial differences in the capacities and potentials of ecosystems, ecoregions stratify the environment by its probable response to disturbance (Bryce, Omernik, and Larsen, 1999).

(J) Epilimnion—Zone of atmospheric mixing in a thermostratified lake.



(K) *Escherichia coli* (*E. coli*)—A type of fecal coliform bacteria found in the intestines of animals and humans. The presence of *E. coli* in water is a strong indication of recent sewage or animal waste contamination. Sewage may contain many types of disease-causing organisms (pathogens).

(L) Hypolimnion—Zone beneath the zone of atmospheric mixing in a thermostratified lake.

(M) Lethal concentration₅₀ (LC₅₀)—Concentration of a toxicant which would be expected to kill fifty percent (50%) of the individuals of the test species organisms in a test of specified length of time.

(N) Losing stream—A stream which distributes thirty percent (30%) or more of its flow during low flow conditions through natural processes, such as through permeable geologic materials into a bedrock aquifer within two (2) miles' flow distance downstream of an existing or proposed discharge. Flow measurements to determine percentage of water loss must be corrected to approximate the 7Q10 stream flow. If a stream bed or drainage way has an intermittent flow or a flow insufficient to measure in accordance with this rule, it may be determined to be a losing stream on the basis of channel development, valley configuration, vegetation development, dye tracing studies, bedrock characteristics, geographical data, and other geological factors. Losing streams are listed in Table J; additional streams may be determined to be losing by the Missouri Department of Natural Resources.

(O) Low-flow conditions—Where used in this regulation in the context of mixing zones, the low-flow conditions shall refer to the minimum amount of stream flow occurring immediately upstream of a wastewater discharge and available, in whole or in part, for attenuation of wastewater pollutants.

1. Seven- (7-) day, one- (1-) in-ten- (10-) year low flow (7Q10)—The lowest average flow for seven (7) consecutive days that has a probable recurrence interval of once-in-ten (10) years.

2. Sixty- (60-) day, one- (1-) in-two- (2-) year low flow (60Q2)—The lowest average flow for sixty (60) consecutive days that has a probable recurrence interval of once-in-two (2) years.

3. Thirty- (30-) day, one- (1-) in-ten- (10-) year low flow (30Q10)—The lowest average flow for thirty (30) consecutive days that has a probable recurrence interval of once-in-ten (10) years.

4. One- (1-) day, one- (1-) in-ten- (10-) year low flow (1Q10)—The lowest average flow for one (1) day that has a probable recurrence interval of once-in-ten (10) years.

(P) Missouri Use Designation Dataset—A digital geospatial dataset used in conjunction with geographic information systems and maintained by the department. This dataset documents the names and locations of the state's rivers, streams, lakes and reservoirs which have been assigned designated uses. The initial version of this dataset, as adopted on November 6, 2013, reflects Tables G and H plus any additional presumptive uses described in section (2). The dataset will also include information regarding both pending and approved determinations, variances, use attainability analyses and water quality standards revisions. The dataset uses the geospatial framework provided by the National Hydrography Dataset and is enhanced and supported by hydrological and physical information obtained through the Missouri Resource Assessment Partnership (MoRAP) and other scientific sources. The dataset is limited in geographic extent to the state of Missouri.

(Q) Mixing zone—An area of dilution of effluent in the receiving water beyond which chronic toxicity criteria must be met.

(R) National Hydrography Dataset (NHD)—A digital vector dataset used in conjunction with geographic information systems to describe the location of rivers, streams, lakes, reservoirs, and other surface water features. As applied in this rule, the term refers to the 1:100,000 scale dataset generated by the United States Geological Survey. This dataset provides the geospatial framework for the Missouri Use Designation Dataset.

(S) Outstanding national resource waters—Waters which have outstanding national recreational and ecological significance. These waters shall receive special protection against any degradation in quality. Congressionally-designated rivers, including those in the Ozark national scenic riverways and the wild and scenic rivers system, are so designated (see Table D).

(T) Outstanding state resource waters—High quality waters with a significant aesthetic, recreational, or scientific value which are specifically designated as such by the Clean Water Commission (see Table E).

(U) Ozark streams—Streams lying within the Ozark faunal region as described in the *Aquatic Community Classification System for Missouri*, Missouri Department of Conservation, 1989.

(V) Reference lakes or reservoirs—Lakes or reservoirs determined by Missouri Department of Natural Resources to be the best available representatives of ecoregion waters in a natural condition with respect to habitat, water quality, biological integrity and diversity, watershed land use, and riparian conditions.

(W) Reference stream reaches—Stream reaches determined by the department to be the best available representatives of ecoregion waters in a natural condition, with respect to habitat, water quality, biological integrity and diversity, watershed land use, and riparian conditions.

(X) Regulated-flow streams—A stream that derives a majority of its flow from an impounded area with a flow-regulating device.

(Y) Use Attainability Analysis (UAA)—A structured scientific assessment of the factors affecting the attainment of the use which may include physical, chemical, biological, and economic factors as described in 40 CFR 131.10(g).

(Z) Variance—A temporary modification to 10 CSR 20-7.031 that is deemed necessary in accordance with section (12) of this rule.

(AA) Water effect ratio—Appropriate measure of the toxicity of a material obtained in a site water divided by the same measure of the toxicity of the same material obtained simultaneously in a laboratory dilution water.

(BB) Water hardness—The total concentration of calcium and magnesium ions expressed as calcium carbonate. For purposes of this rule, hardness will be determined by the lower quartile (twenty-fifth percentile) value of a representative number of samples from the water body in question or from a similar water body at the appropriate stream flow conditions.

(CC) Water quality criteria—Chemical, physical, and biological properties of water that are necessary to protect beneficial water uses.

(DD) Waters of the state—All rivers, streams, lakes, and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state which are not entirely confined and located completely upon lands owned, leased, or otherwise controlled by a single person or by two (2) or more persons jointly or as tenants in common and includes waters of the United States lying within the state.

(EE) Wetlands—Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. This definition is consistent with both the United States Army Corps of Engineers wetlands definition at 33 CFR 328.3(b) and the United States Environmental Protection Agency wetlands definition at 40 CFR 232.2(r).



(FF) Whole effluent toxicity tests—A toxicity test conducted under specified laboratory conditions on specific indicator organisms. To estimate chronic and acute toxicity of the effluent in its receiving stream, the effluent may be diluted to simulate the computed percent effluent at the edge of the mixing zone or zone of initial dilution.

(GG) Zone of initial dilution—A small area of initial mixing below an effluent outfall beyond which acute toxicity criteria must be met.

(HH) Zone of passage—A continuous water route necessary to allow passage of organisms with no acutely toxic effects produced on their populations.

(II) Other definitions as set forth in the Missouri Clean Water Law and 10 CSR 20-2.010 shall apply to terms used in this rule.

(2) Designation of Uses.

(A) Rebuttable presumption. Consistent with the presumptive beneficial use protections described by 40 CFR Part 131 and section 101(a)(2) of the federal Clean Water Act—

1. All perennial rivers and streams;
2. All streams with permanent pools;
3. All rivers and streams included within the 1:100,000 scale National Hydrography Dataset (NHD) described in subsection (1)(R) of this rule; and

4. All lakes and reservoirs that intersect the flow lines of rivers and streams identified in paragraph (2)(A)3. of this rule, shall be presumed to support the following designated uses: Aquatic habitat protection; Human health protection; Whole body contact recreation – Category B; and Secondary contact recreation, as defined in this rule. This presumption is rebuttable subject to demonstration based on use attainability analyses as described in subsection (2)(F) of this rule.

(B) Presumed Uses. All waters described in subsection (2)(A) shall also be assigned Livestock and wildlife protection and Irrigation designated uses, as defined in this rule.

(C) Other Uses. Use designations other than those mentioned in subsections (2)(A) and (2)(B) of this rule may be applied to waters identified in subsection (2)(A), Table G and Table H of this rule on a site-specific, case-by-case basis following approval by the Clean Water Commission and U.S. Environmental Protection Agency.

(D) Use Designation. Uses of waters shall be designated as follows—

1. Designated uses applied to individual water bodies or stream segments pursuant to subsections (2)(A) through (2)(C) of this rule shall include those identified in Tables G and H and in the Missouri Use Designation

Dataset maintained by the department, except as described in paragraph (2)(D)3. of this rule.

2. Designated uses may be assigned on a case-by-case basis to water bodies or stream segments not otherwise represented in Tables G and H or in the Missouri Use Designation Dataset but falling within the jurisdiction of the Missouri Clean Water Law.

3. Assuming reasonable evidence, presumptive beneficial use protections described above shall not apply to water bodies without designated uses pursuant to Tables G or H prior to November 6, 2013 that meet one of the following criteria:

A. Waste treatment systems, or prior converted cropland, which are excluded from the federal definition of “waters of the United States” under 40 CFR 122.2; or

B. Man-made structures which were constructed solely to treat or convey wastewater; or

C. Man-made bodies of water or structures which lack perennial flow and were constructed to treat, convey, or temporarily hold or slow stormwater following precipitation events (this may include certain structures associated with Best Management Practices such as sediment basins, wet and dry detention basins, bioretention basins, rain gardens, bioswales, etc.); or

D. Water bodies that lack jurisdiction under either the federal Clean Water Act or Missouri Clean Water Law.

After receiving such evidence, the department shall make a written determination regarding the applicability of the above-described presumptions, and such determination shall be subject to appeal pursuant to section 621.250, RSMo.

(E) Missouri Use Designation Dataset. The department shall maintain the geospatial dataset described in subsection (1)(P) of this rule. Future revisions to water quality standards in the State of Missouri shall be reflected in the Missouri Use Designation Dataset and shall take effect upon approval by the Clean Water Commission and U.S. Environmental Protection Agency.

(F) Use Attainability. Demonstrations of use attainability for the protection of fish, shellfish and wildlife, recreation in and on the water, or human health protection shall assess the physical, chemical, biological, economic or other factors affecting the attainment of a use pursuant to 40 CFR 131.10(g). Use attainability analyses intended for other designated uses shall be designed and implemented on a case-by-case basis. In accordance with 40 CFR 131.10(j), the following potential actions must be preceded and supported by a use attainability analysis:

1. Designation of a water body for uses that do not include the protection of fish, shellfish and wildlife, recreation in and on the water, and human health protection;

2. Removal of one or more of the uses identified in paragraph 1. of this section; or

3. Application of any use sub-categories for the protection of fish, shellfish and wildlife, recreation in and on the water, or human health protection which require less stringent criteria.

After receiving such demonstration, the department shall make a written determination regarding the use attainability analysis, and such determination shall be subject to appeal pursuant to section 621.250, RSMo.

(3) Antidegradation. The antidegradation policy shall provide three (3) levels of protection.

(A) Tier One. Public health, existing in-stream water uses, and a level of water quality necessary to protect existing uses shall be maintained and protected.

(B) Tier Two. For all waters of the state, if existing water quality is better than applicable water quality criteria established in these rules, that existing quality shall be fully maintained and protected. Water quality may be lowered only if the state finds, after full satisfaction of the intergovernmental coordination and public participation requirements, that the lowered water quality is necessary to allow important economic and social development in the geographical area in which the waters are located. In allowing the lowering of water quality, the state shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control before allowing any lowering of water quality. This provision allows a proposed new or modified point or nonpoint source of pollution to result in limited lowering of water quality provided that—

1. The source does not violate any of the general criteria set forth in section (3) of this rule, or any of the criteria for protection of beneficial uses set forth in section (4) of this rule;

2. The source meets all applicable technological effluent limitations and minimum standards of design for point sources or minimum pollution control practices for nonpoint sources; and

3. The lowering of water quality, in the judgment of the department, is necessary for the accommodation of important economic and social development in the geographical vicinity of the discharge. In making a preliminary determination based on socioeconomic



development considerations, the department may consider the potential for regional increases in utility rates, taxation levels, or recoverable costs associated with the production of goods or services that may result from the imposition of a strict no-degradation policy. Consideration may also be given to the possible indirect effects of a policy on per capita income and the level of employment in the geographical vicinity of the proposed pollution source. Any preliminary decision by the department to allow a limited lowering of water quality will be stated as such in a public notice issued pursuant to 10 CSR 20-6.010. Pursuant to that provision, a public hearing will be held in the geographical vicinity of the proposed pollution source, if the department determines there is significant public interest in and need for a hearing.

(C) Tier Three. There shall be no lowered water quality in outstanding national resource waters or outstanding state resource waters, as designated in Tables D and E.

(D) The three (3) levels of protection provided by the antidegradation policy in subsections (A) through (C) of this section shall be implemented according to procedures hereby incorporated by reference and known as the "Missouri Antidegradation Rule and Implementation Procedure, May 2, 2012." No later amendments or additions are included. This document shall be made available to anyone upon written request to the Department of Natural Resources, Water Protection Program, Water Pollution Control Branch, PO Box 176, Jefferson City, MO 65102-0176.

(4) General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:

(A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly, or harmful bottom deposits or prevent full maintenance of beneficial uses;

(B) Waters shall be free from oil, scum, and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;

(C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor, or prevent full maintenance of beneficial uses;

(D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal, or aquatic life;

(E) There shall be no significant human

health hazard from incidental contact with the water;

(F) There shall be no acute toxicity to livestock or wildlife watering;

(G) Waters shall be free from physical, chemical, or hydrologic changes that would impair the natural biological community;

(H) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment, and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to sections 260.200–260.247, RSMo;

(I) Waters in mixing zones, ephemeral aquatic habitat and waters of the state lacking designated uses shall be subject to the following requirements:

1. The acute toxicity criteria of Tables A and B and the requirements of subsection (5)(B); and

2. The following whole effluent toxicity conditions must be satisfied:

A. Single dilution method. The percent effluent at the edge of the zone of initial dilution will be computed and toxicity tests performed at this percent effluent. These tests must show statistically-insignificant mortality on the most sensitive of at least two (2) representative, diverse species; and

B. Multiple dilution method. An LC_{50} will be derived from a series of test dilutions. The computed percent effluent at the edge of the zone of initial dilution must be less than three-tenths (0.3) of the LC_{50} for the most sensitive of at least two (2) representative, diverse species.

(5) Specific Criteria. The specific criteria shall apply to waters contained in Tables G and H of this rule and the Missouri Use Designation Dataset. Protection of drinking water supply is limited to surface waters designated for raw drinking water supply and aquifers. Protection of whole body contact recreation is limited to waters designated for that use.

(A) The maximum chronic toxicity criteria in Tables A and B shall apply to waters designated for the indicated uses given in the Missouri Use Designation Dataset and Tables G and H, except for waters designated for Ephemeral Aquatic Habitat or where less stringent criteria have been developed following a use attainability analysis. All Table A and B criteria are chronic toxicity criteria, except those specifically identified as acute criteria. Water contaminants shall not cause or contribute to concentrations in excess of these values. Table A values listed as health advisory levels shall be used in establishing discharge permit limits and management strategies until additional data becomes avail-

able to support alternative criteria, or other standards are established. However, exceptions may be granted in the following cases:

1. Permanent flow streams when the stream flow is less than 7Q10;

2. Regulated flow streams if the flow is less than the minimum release flow agreed upon by the regulating agencies;

3. For the natural and unavoidable chemical and physical changes that occur in the hypolimnion of lakes. Streams below impoundments shall meet applicable specific criteria;

4. For mixing zones.

A. The mixing zone shall be exempted from the chronic criteria requirements of this section for those components of waste that are rendered nontoxic by dilution, dissipation, or rapid chemical transformation. Acute numeric criteria of Tables A and B and whole effluent acute toxicity requirements of subsection (4)(I) must be met at all times within the mixing zone, except within the zone of initial dilution. The following criteria do not apply to thermal mixing zones. Criteria for thermal mixing zones are listed in paragraph (5)(D)6.

B. The maximum size of mixing zones and zone of initial dilution will be determined as follows:

(I) Streams with 7Q10 low flows of less than one-tenth cubic foot per second (0.1 cfs);

(a) Mixing zone—not allowed;

and

(b) Zone of initial dilution—not

allowed;

(II) Streams with 7Q10 low flow of one-tenth to twenty cubic feet per second (0.1–20 cfs)—

(a) Mixing zone—one-quarter (1/4) of the stream width, cross-sectional area, or volume of flow; length one-quarter (1/4) mile. If the discharger can document that rapid and complete mixing of the effluent occurs in the receiving stream, the mixing zone may be up to one-half (1/2) of the stream width, cross-sectional area, or volume of flow; and

(b) Zone of initial dilution—one-tenth (0.1) of the mixing zone width, cross-sectional area, or volume of flow;

(III) Streams with 7Q10 low flow of greater than twenty cubic feet per second (20 cfs)—

(a) Mixing zone—one-quarter (1/4) of stream width, cross-sectional area, or volume of flow; length of one-quarter (1/4) mile; and

(b) Zone of initial dilution—one-tenth (0.1) of the mixing zone width, cross-sectional area, or volume of flow and no



more than ten (10) times the effluent design flow volume unless the use of diffusers or specific mixing zone studies can justify more dilution; and

(IV) Lakes.

(a) Mixing zone—not to exceed one-quarter (1/4) of the lake width at the discharge point or one hundred feet (100') from the discharge point, whichever is less.

(b) Zone of initial dilution—not allowed.

C. A mixing zone shall not overlap another mixing zone in a manner that the maintenance of aquatic life in the body of water in the overlapping area would be further adversely affected.

D. Other factors that may prohibit or further limit the size and location of mixing zones are the size of the river, the volume of discharge, the stream bank configuration, the mixing velocities, other hydrologic or physiographic characteristics, and the designated uses of the water, including type of aquatic life supported, potential effects on mouths of tributary streams, and proximity to water supply intakes.

E. Zones of passage must be provided wherever mixing zones are allowed.

F. Mixing zone and zone of initial dilution size limits will normally be based on streams at the 7Q10 low flow. However, this percent of stream size limits also applies at higher stream flows and discharge limitations may be based on higher stream flows if discharge volume or quality may be adjusted to correlate with stream flow; and

5. For wetlands. Water quality needs will vary depending on the individual characteristics of the wetland. Application of numeric criteria will depend on the specific aquatic life, wildlife, and vegetation requirements.

A. Specific criteria for wetlands shall be developed using scientific procedures including, but not limited to, those procedures described in the U.S. Environmental Protection Agency's *Water Quality Standards Handbook*, Second Edition, August 1994 as published by the Office of Science and Technology, Office of Water, U.S. Environmental Protection Agency, Washington, DC 20460, which are hereby incorporated by reference and do not include any later amendments or additions. The department shall maintain a copy of the referenced documents and shall make them available to the public for inspection and copying at no more than the actual cost of reproduction.

B. Specific criteria shall protect all life stages of species associated with wetlands and prevent acute and chronic toxicity in all parts of the wetland.

C. Specific criteria shall include both chronic and acute concentrations to better reflect the different tolerances to the inherent variability between concentrations and toxicological characteristics of a condition.

D. Specific criteria shall be clearly identified as maximum "not to be exceeded" or average values, and if an average, the averaging period and the minimum number of samples. The conditions, if any, when the criteria apply shall be clearly stated (e.g., specific levels of hardness, pH, or water temperature). Specific sampling requirements (e.g., location, frequency), if any, shall also be identified.

E. The data, testing procedures, and application (safety) factors used to develop specific criteria shall reflect the nature of the condition (e.g., persistency, bioaccumulation potential) and the most sensitive species associated with the wetland.

F. Each specific criterion shall be promulgated in rule 10 CSR 20-7.031. The public notice shall include a description of the affected wetland and the reasons for applying the proposed criterion. A public hearing may be held in the geographical vicinity of the affected wetland. Any specific criterion promulgated under these provisions is subject to U.S. Environmental Protection Agency approval prior to becoming effective.

(B) Toxic Substances.

1. Water contaminants shall not cause the criteria in Tables A and B to be exceeded. Concentrations of these substances in bottom sediments or waters shall not harm benthic organisms and shall not accumulate through the food chain in harmful concentrations, nor shall state and federal maximum fish tissue levels for fish consumption be exceeded. More stringent criteria may be imposed if there is evidence of additive or synergistic effects.

2. For compliance with this rule, metals shall be analyzed by the following methods:

A. Aquatic life protection and human-health protection—fish consumption.

(I) Mercury—total recoverable metals.

(II) All other metals—dissolved metals;

B. Drinking water supply—total recoverable metals; and

C. All other beneficial uses—total recoverable metals.

3. Other potentially toxic substances for which sufficient toxicity data are not available may not be released to waters of the state until safe levels are demonstrated through adequate bioassay studies.

4. Drinking water criteria, for substances which are rendered nontoxic by trans-

formation processes in the surface water body, shall apply at water supply withdrawal points.

5. Site-specific alternative criteria for human health-fish consumption may be allowed. Designation of these site-specific criteria must follow procedures set forth in U.S. Environmental Protection Agency's *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health*, October 2000 (EPA-822-B-00-004), as published by the Office of Science and Technology, Office of Water, U.S. Environmental Protection Agency, Washington, DC 20460, which is hereby incorporated by reference and does not include any later amendments or additions. The department shall maintain a copy of the referenced document and shall make it available to the public for inspection and copying at no more than the actual cost of reproduction.

6. Metals criteria for which toxicity is hardness dependent are in equation format in Table A.

7. Total ammonia nitrogen. For any given sample, the total ammonia nitrogen criteria shall be based on the pH and temperature of the water body measured at the time of each sample at the point of compliance.

A. The acute criteria shall not be exceeded at any time except in those waters for which the department has allowed a zone of initial dilution (ZID). The one- (1-) day Q_{10} low flow condition will be used in determining acute total ammonia nitrogen criteria.

B. The chronic criteria shall not be exceeded except in water segments for which the department has allowed a mixing zone (MZ). The chronic criteria shall be based on a thirty- (30-) day exposure period. Therefore, the thirty- (30-) day Q_{10} low flow condition of the receiving water body will be used in determining chronic total ammonia nitrogen criteria.

C. Without sufficient and reliable data, it is assumed that early life stages are present and must be protected at all times of the year.

(I) Sufficient and reliable data shall include, but are not limited to, seasonal studies on the fish species distributions, spawning periods, nursery periods, duration of sensitive life stages, and water body temperature. Best professional judgment from fisheries biologists and other scientists will be considered as appropriate.

(II) The time frames during the year when early life stages are considered to be absent are those time periods when early life stages are present in numbers that, if chronic toxicity did occur, would not affect the long-term success of the populations.



(III) A source of information for determining the duration of early life stages is *The American Society for Testing and Materials (ASTM) Standard E-1241*, "Standard Guide for Conducting Early Life-Stage Toxicity Tests with Fishes."

(IV) Protection of early life stages should include the most sensitive species that have used a water body for spawning and rearing since November 28, 1975.

(C) Bacteria. The protection of whole body contact recreation is limited to waters designated for that use. The recreational season is from April 1 to October 31. The *E. coli* count shall not exceed the criterion listed in Table A as a geometric mean during the recreational season in waters designated for whole body contact recreation. The *E. coli* count shall not exceed one hundred twenty-six (126) per one hundred milliliters (100 mL) at any time in losing streams. For waters designated for secondary contact recreation, the *E. coli* count shall not exceed one thousand one hundred thirty-four (1,134) per one hundred milliliters (100 mL) as a geometric mean during the recreational season.

(D) Temperature.

1. For warm water habitats beyond the mixing zone, water contaminant sources and physical alteration of the water course shall not raise or lower the temperature of a stream more than five degrees Fahrenheit (5 °F) or two and seven-ninths degrees Celsius (2 7/9 °C). Water contaminant sources shall not cause or contribute to stream temperature in excess of ninety degrees Fahrenheit (90 °F) or thirty-two and two-ninths degrees Celsius (32 2/9 °C). However, site-specific ambient temperature data and requirements of sensitive resident aquatic species will be considered, when data are available, to establish alternative maxima or deviations from ambient temperatures.

2. For cool water habitats beyond the mixing zone, water contaminant sources and physical alteration of the water course shall not raise or lower the temperature of a stream more than five degrees Fahrenheit (5 °F) or two and seven-ninths degrees Celsius (2 7/9 °C). Water contaminant sources shall not cause or contribute to stream temperature in excess of eighty-four degrees Fahrenheit (84 °F) or twenty-eight and eight-ninths degrees Celsius (28 8/9 °C).

3. For cold water habitats beyond the mixing zone, water contaminant sources and physical alteration of the water course shall not raise or lower the temperature of the water body more than two degrees Fahrenheit (2 °F) or one and one-ninth degrees Celsius (1 1/9 °C). Water contaminant sources shall not cause or contribute to temperatures above

sixty-eight degrees Fahrenheit (68 °F) or twenty degrees Celsius (20 °C).

4. Water contaminant sources shall not cause any measurable rise in the temperature of lakes. An increase is allowable for Lake Springfield, Thomas Hill Reservoir, and Montrose Lake; however, discharges from these lakes must comply with temperature limits for streams.

5. For the Mississippi River Zones 1A and 2, the water temperature outside the mixing zone shall not exceed the maximum limits indicated in the following list during more than one percent (1%) of the time in any calendar year. In Zone 1B, limits may not be exceeded more than five percent (5%) of the time in a calendar year. At no time shall the river water temperature outside of the thermal mixing zone exceed the listed limits by more than three degrees Fahrenheit (3 °F) or one and six-ninths degrees Celsius (1 6/9 °C).

	A and B		C	
	(°F)	(°C)	(°F)	(°C)
January	45	7 2/9	50	10
February	45	7 2/9	50	10
March	57	13 8/9	60	15 5/9
April	68	20	70	21 1/9
May	78	25 5/9	80	26 6/9
June	86	30	87	30 5/9
July	88	31 1/9	89	31 6/9
August	88	31 1/9	89	31 6/9
September	86	30	87	30 5/9
October	75	23 8/9	78	25 5/9
November	65	18 3/9	70	21 1/9
December	52	11 1/9	57	13 8/9

A = Zone 1A—Des Moines River to Lock and Dam No. 25.

B = Zone 1B—Lock and Dam No. 25 to Lock and Dam No. 26.

C = Zone 2—Lock and Dam No. 26 to the Missouri-Arkansas state line.

6. Thermal mixing zones shall be limited to twenty-five percent (25%) of the cross-sectional area or volume of a river, unless biological surveys performed in response to section 316(a) of the federal Clean Water Act (or equivalent) indicate no significant adverse impact on aquatic life. Thermal plume lengths and widths within rivers, and all plume dimensions within lakes, shall be determined on a case-by-case basis and shall be based on physical and biological surveys when appropriate.

(E) pH. Water contaminants shall not cause pH to be outside of the range of 6.5 to 9.0 standard pH units.

(F) Taste- and Odor-Producing Substances. Taste- and odor-producing substances shall

be limited to concentrations in the streams or lakes that will not interfere with beneficial uses of the water. For those streams and lakes designated for drinking water supply use, the taste- and odor-producing substances shall be limited to concentrations that will not interfere with the production of potable water by reasonable water treatment processes.

(G) Turbidity and Color. Water contaminants shall not cause or contribute to turbidity or color that will cause substantial visible contrast with the natural appearance of the stream or lake or interfere with beneficial uses.

(H) Solids. Water contaminants shall not cause or contribute to solids in excess of a level that will interfere with beneficial uses. The stream or lake bottom shall be free of materials which will adversely alter the composition of the benthos, interfere with the spawning of fish or development of their eggs, or adversely change the physical or chemical nature of the bottom.

(I) Radioactive Materials. All streams and lakes shall conform to state and federal limits for radionuclides established for drinking water supply.

(J) Dissolved Oxygen. Water contaminants shall not cause the dissolved oxygen to be lower than the levels described in Table A or Table K—Site-Specific Criteria.

(K) Total Dissolved Gases. Operation of impoundments shall not cause the total dissolved gas concentrations to exceed one hundred ten percent (110%) of the saturation value for gases at the existing atmospheric and hydrostatic pressures.

(L) Sulfate and Chloride Limit for Protection of Aquatic Life. Water contaminants shall not cause sulfate or chloride criteria to exceed the levels described in Table A.

(M) Carcinogenic Substances. Carcinogenic substances shall not exceed concentrations in water which correspond to the 10⁻⁶ cancer risk rate. This risk rate equates to one (1) additional cancer case in a population of one (1) million with lifetime exposure. Derivation of this concentration assumes average water and fish consumption amounts. Assumptions are two (2) liters of water and six and one-half (6.5) grams of fish consumed per day. Federally established final maximum contaminant levels for drinking water supply shall supersede drinking water supply criteria developed in this manner.

(N) Nutrients and Chlorophyll.

1. Definitions.

A. For the purposes of this rule—

(I) All lakes and reservoirs shall be referred to as "lakes"; and

(II) Only total phosphorus (TP) criteria are derived from lake characteristics.



Total nitrogen (TN) and chlorophyll (Chl) criteria are determined as a function of TP criteria.

B. Lake ecoregions—Due to differences in topography, soils, and geology, nutrient criteria for lakes and reservoirs will be determined by the use of four (4) major ecoregions. These regions were delineated by grouping the ecological subsections described in Nigh and Schroeder, 2002, *Atlas of Missouri Ecoregions*, Missouri Department of Conservation as follows:

(I) Plains: TP2—Deep Loess Hills; TP3—Loess Hills; TP4—Grand River Hills; TP5—Chariton River Hills; TP6—Claypan Till Plains; TP7—Wyaconda River Dissected Till Plains; TP8—Mississippi River Hills;

(II) Ozark Border: MB2a—Crowley's Ridge Loess Woodland/Forest Hills; OZ11—Prairie Ozark Border; OZ12—Outer Ozark Border; OZ13—Inner Ozark Border;

(III) Ozark Highland: OZ1—Springfield Plain; OZ2—Springfield Plateau; OZ3—Elk River Hills; OZ4—White River Hills; OZ5—Central Plateau; OZ6—Osage River Hills; OZ7—Gasconade River Hills; OZ8—Meramec River Hills; OZ9—Current River Hills; OZ10—St. Francois Knobs and Basins; OZ14—Black River Ozark Border; and

(IV) Big River Floodplain: MB1—Black River Alluvial Plain; MB2b—Crowley's Ridge Footslopes and Alluvial Plains; MB3—St. Francis River Alluvial Plain; MB4, OZ16, TP9—Mississippi River Alluvial Plain; OZ15, TP1—Missouri River Alluvial Plain.

C. Criteria values.

(I) Prediction value—A TP concentration that is derived from the characteristics of a lake including dam height in feet, hydraulic residence time in years, and percentage of the watershed that was historically covered by prairie grasses. Prediction values for total phosphorus are calculated directly from these characteristics.

(II) Reference value—A TP concentration that is representative of lakes within an ecoregion having the following characteristics:

(a) Less than twenty percent (20%) of the watershed is in crop land and urban land combined;

(b) There are no point source wastewater discharges and no concentrated animal feeding operations within the watershed;

(c) In the Plains region, more than fifty percent (50%) of the watershed is in grass land; and

(d) In the Ozark Highlands region, more than fifty percent (50%) of the

watershed is in woodland.

(III) Site-specific value—A TP concentration for a lake that has been identified as having trophic characteristics for which the reference of the ecoregion and the prediction values for that water body are not adequate to prevent deterioration of water quality. Site-specific criteria are applicable to lakes having a geometric mean TP concentration equal to or less than the 10th percentile value of the range of geometric mean TP concentrations measured in reference lakes within a lake ecoregion. Site-specific criteria are also applicable to lakes with actual TP geometric mean concentrations that are at or below the reference value where the prediction value is at or below the 10th percentile for TP geometric mean concentrations within a lake ecoregion. The 10th percentile values for each ecoregion are listed in Table L and lakes with site-specific criteria are listed in Tables M and N.

D. Tributary arm—A substantial segment of an L2 lake that is primarily recharged by a source or sources other than the main channel of the lake.

2. This rule applies to all lakes and reservoirs that are waters of the state and that are outside the Big River Floodplain ecoregion and have an area of at least ten (10) acres during normal pool.

3. Nutrient criteria for lakes and reservoirs with site-specific criteria are listed in Tables M and N. Nutrient criteria for other lakes are as follows:

A. Total phosphorus (TP)—

(I) For lakes in which the TP prediction value or the actual TP concentration does not exceed the reference value listed in Table L, the TP criterion shall be the reference value, except as described below;

(II) For lakes in which the TP prediction value does not exceed the reference value, and the actual TP value does not exceed the prediction value, the TP criterion shall be the prediction value;

(III) For lakes in which the TP prediction value and the actual TP concentration exceed the reference value listed in Table L, the TP criterion shall be limited to the prediction value; and

(IV) Site-specific TP criteria for the tributary arms of L2 lakes are listed in Table N;

B. Total nitrogen (TN)—

(I) For lakes in which the TP prediction value does not exceed the reference value listed in Table L, TN concentration shall be limited to twenty (20) times the TP reference value;

(II) For lakes in which the TP prediction value does not exceed the reference

value, and the actual TP value does not exceed the prediction value, TN concentration shall be limited to twenty (20) times the TP prediction value;

(III) For lakes in which the TP prediction value exceeds the TP reference value listed in Table L, TN concentration shall be limited to twenty (20) times the TP prediction value; and

(IV) This portion of the rule does not apply to lakes that are held to site-specific criteria for TP, TN, and Chl, as listed in Tables M and N; and

C. Chlorophyll (Chl)—Chl criteria shall be calculated from TP criteria as follows:

(I) Plains: Chl:TP = 0.44;

(II) Ozark Border and Ozark Highlands: Chl:TP = 0.42; and

(III) This portion of the rule does not apply to lakes that are held to site-specific criteria for TP, TN, and Chl, as listed in Tables M and N.

4. All TP, TN, and chlorophyll concentrations must be calculated as the geometric mean of a minimum of four (4) representative samples per year for four (4) years that are not necessarily consecutive. All samples must be collected from the surface, near the outflow end of the lake, and during the period May 1–August 31.

(O) All methods of sample collection, preservation, and analysis used in applying criteria in these standards shall be in accord with those prescribed in the latest edition of *Standard Methods for the Examination of Water and Wastewater* or other procedures approved by the Environmental Protection Agency and the Missouri Department of Natural Resources.

(P) Criteria to protect designated uses are based on current technical literature, especially the Environmental Protection Agency's publication, *Quality Criteria for Water*, 1986. Criteria may be modified or expanded as additional information is developed or as needed to define narrative criteria for particular situations or locations.

(Q) WET Chronic Tests. Chronic WET tests performed at the percent effluent at the edge of the mixing zone shall not be toxic to the more sensitive of at least two (2) representative, diverse species. Pollutant attenuation processes such as volatilization and biodegradation which may occur within the allowable mixing zone will be considered in interpreting results.

(R) Biocriteria. The biological integrity of waters, as measured by lists or numeric indices of benthic invertebrates, fish, algae, or other appropriate biological indicators, shall not be significantly different from reference waters. Waters targeted for numeric biological

criteria assessment must be contained within the Missouri Use Designation Dataset and shall be compared to reference waters of similar size, scale within the stream network, habitat type, and aquatic ecoregion type. Reference water locations for some aquatic habitat types are listed in Table I.

(S) Site-Specific Criteria Development for the Protection and Propagation of Fish, Shellfish, and Wildlife. When water quality criteria in this regulation are either underprotective or overprotective of water quality due to those influencing bioavailability, or non-anthropogenic conditions for a given water body segment, a petitioner may request site-specific criteria. The petitioner must provide the department with sufficient documentation to show that the current criteria are not adequate and that the proposed site-specific criteria will protect all existing and/or potential uses of the water body.

1. Site-specific criteria may be appropriate where, but is not limited to the examples given in subparagraphs A. or B. of this paragraph.

A. The resident aquatic species of the selected water body have a different degree of sensitivity to a specific pollutant as compared to those species in the data set used to calculate the national or state criteria as described in either of the following parts:

(I) Natural adaptive processes have enabled a viable, balanced aquatic community to exist in waters where natural (non-anthropogenic) background conditions exceed the criterion (e.g., resident species have evolved a genetically-based greater tolerance to high concentrations of a chemical); or

(II) The composition of aquatic species in a water body is different from those used in deriving a criterion (e.g., most of the species considered among the most sensitive, such as salmonids or the cladoceran, *Ceriodaphnia dubia*, which were used in developing a criterion, are absent from a water body).

B. The physical and/or chemical characteristics of the water body alter the biological availability and/or toxicity of the pollutant (e.g., pH, alkalinity, salinity, water temperature, hardness). Such an example is the Water Effect Ratio (WER) defined at (1)(AA) of this rule.

2. All petitioners seeking to develop site-specific criteria shall coordinate with the department early in the process. This coordination will ensure the use of adequate, relevant, and quality data; proper analysis and testing; and defensible procedures.

A. The department will provide guidance for establishing site-specific water quality criteria using scientific procedures includ-

ing, but not limited to, those procedures described in:

(I) U.S. Environmental Protection Agency's *Water Quality Standards Handbook*, Second Edition, August 1994;

(II) U.S. Environmental Protection Agency's *Interim Guidance on Determination and Use of Water-Effect Ratios for Metals* (EPA-823-B-94-001) and subsequent 1997 modifications;

(III) U.S. Environmental Protection Agency's *Streamlined Water-Effect Ratio Procedure for Discharges of Copper* (EPA-822-R-01-005); and

(IV) U.S. Environmental Protection Agency's *Aquatic Life Ambient Freshwater Quality Criteria - Copper 2007 Revision* (EPA-822-R-07-001).

B. Site-specific criteria development for the Protection and Propagation of Fish, Shellfish and Wildlife shall be performed using the guidance documents listed in parts (5)(S)2.A.(I)-(IV) as published by the Office of Science and Technology, Office of Water, U.S. Environmental Protection Agency, Washington, DC 20460, which are hereby incorporated by reference and do not include any later amendments or additions. The department shall maintain a copy of the referenced documents and shall make them available to the public for inspection and copying at no more than the actual cost of reproduction.

3. Site-specific criteria shall protect all life stages of resident species and prevent acute and chronic toxicity in all parts of a water body unless early life stages are determined absent.

4. Site-specific criteria shall include both chronic and acute concentrations to better reflect the different tolerances of resident species to the inherent variability between concentrations and toxicological characteristics of a chemical.

5. Site-specific criteria shall be clearly identified as maximum "not to be exceeded" or average values, and if an average, the averaging period and the minimum number of samples. The conditions, if any, when the criteria apply shall be clearly stated (e.g., specific levels of hardness, pH, or water temperature). Specific sampling requirements (e.g., location, frequency), if any, shall also be identified.

6. The data, testing procedures, and application (safety) factors used to develop site-specific criteria shall reflect the nature of the chemical (e.g., persistency, bioaccumulation potential, and avoidance or attraction responses in fish) and the most sensitive resident species of a water body.

7. The size of a site may be limited to a single water segment, single water subseg-

ment, or may cover a whole watershed depending on the particular situation for which the specific criterion is developed. A group of water bodies may be considered one (1) site if their respective aquatic communities are similar in composition and have comparable water quality.

8. The department shall determine if a site-specific criterion is adequate and justifiable. Each site-specific criterion shall be promulgated into rule 10 CSR 20-7.031. The public notice shall include a description of the affected water body or water body segment and the reasons for applying the proposed criterion. If the department determines that there is significant public interest, a public hearing may be held in the geographical vicinity of the affected water body or water body segment. Any site-specific criterion promulgated under these provisions is subject to U.S. Environmental Protection Agency approval prior to becoming effective.

(6) Groundwater.

(A) Water contaminants shall not cause or contribute to exceedance of Table A, groundwater limits in aquifers and caves. Table A values listed as health advisory levels shall be used in establishing management strategies and groundwater cleanup criteria, until additional data becomes available to support alternative criteria or other standards are established. Substances not listed in Table A shall be limited so that drinking water, livestock watering, and irrigation uses are protected.

(B) When criteria for the protection of aquatic life or human health protection-fish consumption in Table A are more stringent than groundwater criteria, appropriate criteria for the protection of aquatic life or human health protection-fish consumption shall apply to waters in caves and to aquifers which contribute an important part of base flow of surface waters designated for aquatic life protection. Other substances not listed in Table A shall be limited in these aquifers and caves so that the aquatic life use is protected.

(C) Groundwater and other criteria shall apply in any part of the aquifer, including the point at which the pollutant enters the aquifer. A specific monitoring depth requirement for releases to aquifers is included in 10 CSR 20-7.015(7)(A).

(D) For aquifers in which contaminant concentrations exceed groundwater criteria or other protection criteria, and existing and potential uses are not impaired, alternative site-specific criteria may be allowed. To allow alternative criteria, the management authority must demonstrate that alternative criteria will not impair existing and potential uses. The demonstration must consider the factors



and be subject to the review requirements of 10 CSR 20-7.015(7)(F).

(7) Metropolitan No-Discharge Streams. No water contaminant except uncontaminated cooling water, permitted stormwater discharges in compliance with permit conditions and excess wet-weather bypass discharges not interfering with beneficial uses, shall be discharged to the watersheds of streams listed in Table F. Existing interim discharges may be allowed until interceptors are available within two thousand feet (2,000') or a distance deemed feasible by the department, or unless construction of outfalls to alternative receiving waters not listed in Table F is deemed feasible by the department. Existing discharges include wastewater volumes up to the design capacity of existing permitted treatment facilities, including phased increases in design capacity approved by the department prior to the effective date of this rule. Additional facilities may be constructed to discharge to these waters only if they are intended to be interim facilities in accordance with a regional wastewater treatment plan approved by the department.

(8) Outstanding National Resource Waters. Under section (3), antidegradation section of this rule, new releases to outstanding national resource waters from any source are prohibited and releases from allowed facilities are subject to special effluent limitations as required in 10 CSR 20-7.015(6). Table D contains a list of the outstanding national resource waters in Missouri.

(9) Outstanding State Resources Waters. The commission wishes to recognize certain high-quality waters that may require exceptionally stringent water-quality management requirements to assure conformance with the antidegradation policy. The degree of management requirements will be decided on an individual basis. To qualify for inclusion, all of the following criteria must be met. The waters listed in Table E must—

(A) Have a high level of aesthetic or scientific value;

(B) Have an undeveloped watershed; and

(C) Be located on or pass through lands which are state or federally owned, or which are leased or held in perpetual easement for conservation purposes by a state, federal, or private conservation agency or organization.

(10) Lake Taneycomo. The commission wishes to recognize the uniqueness of Lake Taneycomo with respect to its high water clarity, its importance as a trout fishery, and as the central natural resource in the rapidly devel-

oping Branson area and threats to the lake's water quality imposed by development. An especially stringent antidegradation policy will be observed in the development of effluent rules, discharge permits, and nonpoint-source management plans and permits to assure that the high visual quality and aquatic resources are maintained. The use of the best treatment technology for point- and nonpoint-source discharges in the lake's watershed between Table Rock Lake and Power Site Dam will be the guiding principle in establishing limitations.

(11) Compliance with Water Quality Based Limitations. Compliance with new or revised National Pollutant Discharge Elimination System (NPDES) or Missouri operating permit limitations based on criteria in this rule shall be achieved in accordance with federal regulation at 40 CFR Part 122.47, "Schedules of Compliance," May 15, 2000, as published by the Office of the Federal Register, National Archives and Records Administration, Superintendent of Documents, Pittsburgh, PA 15250-7954, which is hereby incorporated by reference and does not include any later amendments or additions. The department shall maintain a copy of the referenced document and shall make it available to the public for inspection and copying at no more than the actual cost of reproduction.

(12) Variances.

(A) A permittee or an applicant for a National Pollutant Discharge Elimination System (NPDES) or Missouri state operating permit, may pursue a temporary variance to a water quality standard pursuant to either section 644.061 or section 644.062, RSMo. In order to obtain U.S. Environmental Protection Agency approval for a water quality standards variance for purposes of the federal Clean Water Act, the following additional provisions apply:

1. A variance applies only to the applicant identified in such variance and only to the water quality standard specified in the variance. A variance does not modify an underlying water quality standard.

2. A variance shall not be granted if water quality standards will be attained by implementing technology-based effluent limits required under 10 CSR 20-7.015 of this rule and by implementing cost-effective and reasonable best management practices for non-point source control.

3. A variance shall not be granted for actions that will violate general criteria conditions prescribed by 10 CSR 20-7.031(4).

4. A variance shall not be granted that would likely jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of such species' critical habitat.

5. A variance may be granted if the applicant demonstrates that achieving the water quality standard is not feasible as supported by an analysis based on the factors provided in 40 CFR 131.10(g), or other appropriate factors.

6. In granting a variance, conditions and time limitations shall be set by the department with the intent that progress be made toward attaining water quality standards.

7. Each variance shall be granted only after public notification and opportunity for public comment. Once any variance to water quality standards is granted, the department shall submit the variance, with an Attorney General Certification that the Clean Water Commission adopted the variance in accordance with state law, to the U.S. Environmental Protection Agency for approval.

(13) Losing Streams.

(A) Losing stream determinations will usually be made upon the first application for discharge to a specific water or location within a watershed for a wastewater treatment facility, subdivision development, or animal waste management facility.

(B) Permits or other approvals for those applications will be processed in accordance with the determinations. Additional permits or approvals will be processed in accordance with the latest determination.

(C) For application purposes, any proposed facility within five (5) miles of a known losing stream segment should presume that facility's receiving stream segment is also losing until and unless a specific geologic evaluation is made of that stream and concludes the stream segment is gaining.

(D) Existing facilities operating under a state operating permit and new facilities being constructed under a construction permit in proximity to stream segments subsequently determined to be losing will be allowed to continue in operation at permitted or approved effluent limits for a period of time lasting the design life of the facility (usually twenty (20) years from the original construction completion), provided the facility is in compliance with its effluent limits and remains in compliance with those limits, and if neither of the following conditions is present:

1. If the discharge from such a facility can be eliminated by connection to a locally available facility, the facility shall be connected within three (3) years of the losing stream



determination. A local facility shall be considered available if that facility or an interceptor is within two thousand feet (2000') or a distance deemed feasible by the department; and

2. If the discharge from such a facility is shown to cause pollution of groundwater, the facility shall be upgraded to appropriate effluent standards within three (3) years. The department shall include appropriate groundwater monitoring requirements in permits for any such facilities so that pollution, should it occur, would be detected.

(E) Any additional permits or approvals for increased treatment plant design capacity will be processed in accordance with the newest losing stream determination. No additional permits or approvals for any facilities shall be construed as lengthening the time for compliance with losing stream effluent limitations as established in subsection (13)(D).

(14) Severance. If a section, subsection, paragraph, sentence, clause, phrase, or any part of this rule be declared unconstitutional or invalid for any reason, the remainder of this rule shall not be affected and shall remain in full force and effect.

(15) Effective Date. This rule becomes effective immediately upon adoption and compliance with the requirements of subsection 644.036.3., RSMo, of the Missouri Clean Water Law and Chapter 536, RSMo.



Table A—Criteria for Designated Uses

- WBC = Whole Body Contact Recreation
- SCR = Secondary Contact Recreation
- AQL = Protection of Aquatic Life
- DWS = Drinking Water Supply
- LWW = Livestock and Wildlife Watering
- GRW = Groundwater

Pollutant (µg/L)	AQL
Chlorine (total residual)	
cold-water	2
warm-water chronic—	10
acute—	19
Cyanide (amenable to chlorination)	
chronic—	5
acute—	22
Hydrogen sulfide (un-ionized)	2

Pollutant (mg/L)	AQL	DWS	LWW	GRW
Chloride				
chronic—	(+)	250		
acute—	(+)			
Sulfate	(+)	250		
Fluoride		4	4	4
Nitrate-N		10		10
Dissolved oxygen (minimum)*				
warm-water and cool-water fisheries	5			
cold-water fisheries	6			
Oil and grease	10			

+ See Non-Metals (Hardness Dependent).

* Site-Specific Criteria have been promulgated for waters listed in Table K.

Pollutant (/100 mL)	WBC-A	WBC-B	SCR
<i>E. coli</i> Bacteria**	126	206	1134

**Geometric mean during the recreational season in waters designated for recreation or at any time in losing streams. The recreational season is from April 1 to October 31.

Pollutant	AQL	
	°F	°C
Temperature (maximum)		
warm-water	90	32 2/9
cool-water	84	28 8/9
cold-water	68	20
Temperature (maximum change)		
warm-water	5	2 7/9
cool-water	5	2 7/9
cold-water	2	1 6/9

Pollutant (percent saturation)	AQL
Total Dissolved Gases	110%



- AQL = Protection of Aquatic Life
- HHF = Human Health Protection-Fish Consumption
- DWS = Drinking Water Supply
- IRR = Irrigation
- LWW = Livestock Wildlife Watering
- GRW = Groundwater

Pollutant (µg/L)	AQL	HHF	DWS	IRR	LWW	GRW
Metals (refer to text in 10 CSR 20-7.031(4)(B)2.)						
(Not Hardness Dependant)						
Aluminum (acute)	750					
Antimony		4,300	6			6
Arsenic	20		50	100		50
Barium			2,000			2,000
Beryllium	5		4	100		4
Boron				2,000		2,000
Cadmium	*		5			5
Chromium III	*		100	100		100
Chromium VI						
chronic	10					
acute	15					
Cobalt					1,000	1,000
Copper	*		1,300		500	1,300
Iron	1,000					300
Lead	*		15			15
Manganese						50
Mercury			2			2
chronic	0.5					
acute	2.4					
Nickel	*		100			100
Selenium	5		50			50
Silver	*		50			50
Thallium		6.3	2			2
Zinc	*		5,000			5,000

*See Metals (Hardness Dependent)



AQL = Protection of Aquatic Life

Pollutant (µg/L)	AQL
Metals (Hardness Dependent)	
Cadmium (µg/L)	Acute: $e(1.0166 \cdot \ln(\text{Hardness}) - 3.062490) * (1.136672 - (\ln(\text{Hardness}) * 0.041838))$ Chronic: $e(0.7409 \cdot \ln(\text{Hardness}) - 4.719948) * (1.101672 - (\ln(\text{Hardness}) * 0.041838))$
Chromium III (µg/L)	Acute: $e(0.8190 \cdot \ln(\text{Hardness}) + 3.725666) * 0.316$ Chronic: $e(0.8190 \cdot \ln(\text{Hardness}) + 0.684960) * 0.860$
Copper (µg/L)	Acute: $e(0.9422 \cdot \ln(\text{Hardness}) - 1.700300) * 0.960$ Chronic: $e(0.8545 \cdot \ln(\text{Hardness}) - 1.702) * 0.960$
Lead (µg/L)	Acute: $e(1.273 \cdot \ln(\text{Hardness}) - 1.460448) * (1.46203 - (\ln(\text{Hardness}) * 0.145712))$ Chronic: $e(1.273 \cdot \ln(\text{Hardness}) - 4.704797) * (1.46203 - (\ln(\text{Hardness}) * 0.145712))$
Nickel (µg/L)	Acute: $e(0.8460 \cdot \ln(\text{Hardness}) + 2.255647) * 0.998$ Chronic: $e(0.8460 \cdot \ln(\text{Hardness}) + 0.058978) * 0.997$
Silver (µg/L)	Acute: $e(1.72 \cdot \ln(\text{Hardness}) - 6.588144) * 0.850$
Zinc (µg/L)	Acute: $e(0.8473 \cdot \ln(\text{Hardness}) + 0.884) * 0.98$ Chronic: $e(0.8473 \cdot \ln(\text{Hardness}) + 0.884) * 0.98$

	Hardness								
	50-74	75-99	100-124	125-149	150-174	175-199	200-224	225-249	250+
Cadmium									
Acute:	2.4	3.6	4.8	5.9	7.1	8.2	9.4	10.5	11.6
Chronic:	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5
Chromium III									
Acute:	323	450	570	684	794	901	1,005	1,107	1,207
Chronic:	42	59	74	89	103	117	131	144	157
Copper									
Acute:	7	10	13	17	20	23	26	29	32
Chronic:	5	7	9	11	13	14	16	18	20
Lead									
Acute:	30	47	65	82	100	118	136	154	172
Chronic:	1	2	3	3	4	5	5	6	7
Nickel									
Acute:	261	367	469	566	660	752	842	930	1,017
Chronic:	29	41	52	63	73	84	94	103	113
Silver									
Acute:	1.0	2.0	3.2	4.7	6.5	8.4	10.6	13.0	15.6
Zinc									
Acute:	65	92	117	142	165	188	211	233	255
Chronic:	65	92	117	142	165	188	211	233	255

AQL = Protection of Aquatic Life

Pollutant (mg/L)	AQL
Non-Metals (Hardness Dependent)	
Chloride (mg/L)	Acute: $287.8 * (\text{Hardness})^{0.205797} * (\text{Sulfate})^{-0.07452}$ Chronic: $177.87 * (\text{Hardness})^{0.205797} * (\text{Sulfate})^{-0.07452}$
Sulfate (mg/L)	Chloride, Cl- (mg/L)
Hardness, H (mg/L)	Cl- < 5 5 ≤ Cl- < 25 25 ≤ Cl- ≤ 500
H < 100	500 500 500
100 ≤ H ≤ 500	500 S1 S2
H > 500	500 2,000 2,000

S1 = [-57.478 + 5.79 (hardness) + 54.163 (chloride)] * 0.65
 S2 = [1276.7 + 5.508 (hardness) - 1.457 (chloride)] * 0.65



AQL = Protection of Aquatic Life
 HHF = Human Health Protection-Fish Consumption
 DWS = Drinking Water Supply
 GRW = Groundwater

Pollutant (µg/L)	AQL	HHF	DWS	GRW
Organics				
Acrolein		780	320	320
Bis-2-chloroisopropyl ether		4,360	1,400	1,400
2, chlorophenol		400	.1	.1
2,4-dichlorophenol	7	790	93	93
2,4-dinitrophenol		14,000	70	70
2,4-dimethylphenol		2,300	540	540
2,4,5-trichlorophenol		9,800	2,600	2,600
2,4,6-trichlorophenol		6.5	2	2
2-methyl-4,6-dinitrophenol		765	13	13
Ethylbenzene	320		700	700
Hexachlorocyclopentadiene	.5		50	50
Isophorone		2,600	36	36
Nitrobenzene		1,900	17	17
Phenol			100	300
chronic—	2,560			
acute—	10,200			
Dichloropropene		1,700	87	87
Para(1,4)-dichlorobenzene		2,600	75	75
Other Dichlorobenzenes		2,600	600	600
1,2,4-trichlorobenzene		940	70	70
1,2,4,5-tetrachlorobenzene		2.9	2.3	2.3
pentachlorobenzene		4.1	3.5	3.5
1,1,1-trichloroethane			200	200
1,1,2-trichloroethane		42	5	5
2,4-dinitrotoluene		9	.11	.04
1,2-diphenylhydrazine		.54	.04	.04
di (2-ethylhexyl) adipate			400	400
n-nitrosodiphenylamine		16	5	5
n-nitrosopyrrolidene		91.9		
2-chloronaphthalene	4,300			
n-nitrosodi-n-propylamine		1.4		

Pollutant (µg/L)	AQL	DWS	GRW
Pesticides			
Demeton	.1		
Endosulfan			
chronic—	.056		
acute—	0.11		
Guthion	.01		
Malathion	.1		
Parathion	.04		
2,4-D		70	70
2,4,5-TP		50	50
Chlorpyrifos	.04		
Alachlor		2	2
Atrazine		3	3
Carbofuran		40	40
Dalapon		200	200
Dibromochloropropane		.2	.2
Dinoseb		7	7
Diquat		20	20
Endothall		100	100
Ethylene dibromide		.05	.05
Oxamyl (vydate)		200	200
Picloram		500	500
Simazine		4	4
Glyphosate		700	700



AQL = Protection of Aquatic Life
 HHF = Human Health Protection-Fish Consumption
 DWS = Drinking Water Supply
 GRW = Groundwater

Pollutant ($\mu\text{g/L}$)	AQL	HHF	DWS	GRW
Bioaccumulative,				
Anthropogenic Toxics (+)				
PCBs		.000045		.000045
4-4' dichlorodiphenyldichloroethane (DDT)		0.00059	0.00059	0.00059
4-4' dichlorodiphenyldichloroethylene (DDE)		0.00059	0.00059	0.00059
4-4' dichlorodiphenyldichloroethane (DDD)		0.00084	0.00083	0.00083
Endrin		.0023	2	2
Endrin aldehyde		.0023	.75	.75
Aldrin		.000079	.00013	.00013
Dieldrin		.000076	.00014	.00014
Heptachlor	.0038	.0002	0.4	0.4
Heptachlor epoxide		.00011	0.2	0.2
Methoxychlor	.03		40	40
Mirex	.001			
Toxaphene		.000073	3	3
Lindane (gamma-BHC)		.062	.2	.2
Alpha,beta,delta-BHC		.0074	.0022	.0022
Chlordane		.00048	2	2
Benzidine		.00053	.00012	.00012
2,3,7,8-tetrachlorodibenzo-p-dioxin (ng/L)* (TCDD or dioxin)		.000014	0.000013	0.000013
Pentachlorophenol**	3.2-pH 6.5	8	1	1
	5.3-pH 7.0			
	8.7-pH 7.5			
	14.0-pH 8.0			
	23.0-pH 8.5			

+ Many of these values are below current detection limits; analyses will be determined by the 17th edition of *Standard Methods* or the most current methods approved by the Environmental Protection Agency.

*Units for dioxin are nanograms/liter (ng/L); 1 $\mu\text{g/L}$ = 1,000 ng/L.

**Toxic impurities may be present in technical-grade pentachlorophenol; monitoring and discharge control will assure that impurities are below toxic concentrations.



HHF = Human Health Protection-Fish Consumption
 DWS = Drinking Water Supply
 GRW = Groundwater

Pollutant (µg/L)	HHF	DWS	GRW
Anthropogenic Carcinogens(+)			
Acrylonitrile	.65	.058	.058
Hexachlorobenzene	.00074	1	1
Bis (2-chloroethyl) ether	1.4	.03	.03
Bis (chloromethyl) ether	0.00078	.00013	.00013
Hexachloroethane	8.7	1.9	1.9
3,3'-dichlorobenzidine	0.08	.04	.04
Hexachlorobutadiene	50	.45	.45
n-nitrosodimethylamine	8	.0007	.0007

(+) Some of these values are below current detection limits; analyses will be determined by the 17th edition of *Standard Methods* or the most current methods approved by the Environmental Protection Agency.

Pollutant (µg/L)	HHF	DWS	GRW
Volatile Organics			
Chlorobenzene	21,000	100	100
Carbon Tetrachloride	5	5	5
Trihalomethanes		80	80
Bromoform	360	4.3	4.3
Chlorodibromomethane	34	0.41	0.41
Dichlorobromomethane	46	0.56	0.56
Chloroform	470	5.7	5.7
Methyl Bromide	4,000	48	48
Methyl Chloride	470	5	5
Methylene Chloride	1,600	4.7	4.7
Dichlorodifluoromethane	570,000		
Trichlorofluoromethane	860,000		
1,2-dichloroethane	99	5	5
1,1,2,2-tetrachloroethane	11	.17	.17
1,1-dichloroethylene	3.2	7	7
1,2-trans-dichloroethylene	140,000	100	100
1,2-cis-dichloroethylene		70	70
Trichloroethylene	80	5	5
Tetrachloroethylene	8.85	0.8	0.8
Benzene	71	5	5
Toluene	200,000	1,000	1,000
Xylenes (total)		10,000	10,000
Vinyl chloride	525	2	2
Styrene		100	100
1,2-dichloropropane	39	0.52	0.52

Pollutant (Fibers/L)	DWS	GRW
Asbestos	7,000,000	



HHF = Human Health Protection-Fish Consumption
 DWS = Drinking Water Supply
 GRW = Groundwater

Pollutant ($\mu\text{g/L}$)	HHF	DWS	GRW
Polynuclear Aromatic Hydrocarbons			
Anthracene	110,000	9,600	9,600
Fluoranthene	370	300	300
Fluorene	14,000	1,300	1,300
Pyrene	11,000	960	960
Benzo(a)pyrene	.049	0.2	0.2
other polynuclear aromatic hydrocarbons*	.049	.0044	.0044
Acenaphthene	2,700	1,200	1,200

*This concentration is allowed for each of the following PAHs: benzo(a)anthracene, 3,4-benzofluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene and benzo(k)fluoranthene. Higher values may be allowed if natural background concentrations exceed these values.

Pollutant ($\mu\text{g/L}$)	HHF	DWS	GRW
Phthalate Esters			
Bis(2-ethylhexyl) phthalate	5.9	6	6
Butylbenzyl phthalate	5,200	3,000	3,000
Diethyl phthalate	120,000	23,000	23,000
Dimethyl phthalate	2,900,000	313,000	313,000
Di-n-butyl phthalate	12,000	2,700	2,700

Health Advisory Levels

Pollutant ($\mu\text{g/L}$)	DWS	GRW
Ametryn	60	60
Baygon	3	3
Bentazon	20	20
Bis-2-chloroisopropyl ether	300	300
Bromacil	90	90
Bromochloromethane	90	90
Bromomethane	10	10
Butylate	350	350
Carbaryl	700	700
Carboxin	700	700
Chloramben	100	100
o-chlorotoluene	100	100
p-chlorotoluene	100	100
Chlorpyrifos	20	20
DCPA (dacthal)	4,000	4,000
Diazinon	0.6	0.6
Dicamba	200	200
Diisopropyl methylphosphonate	600	600
Dimethyl methylphosphonate	100	100
1,3-dinitrobenzene	1	1
Diphenamid	200	200
Diphenylamine	200	200
Disulfoton	0.3	0.3
1,4-dithiane	80	80
Diuron	10	10



DWS = Drinking Water Supply
 GRW = Groundwater

Health Advisory Levels (continued)

Pollutant ($\mu\text{g/L}$)	DWS	GRW
Fenamiphos	2	2
Fluometron	90	90
Fluorotrichloromethane	2,000	2,000
Fonofos	10	10
Hexazinone	200	200
Malathion	200	200
Maleic hydrazide	4,000	4,000
MCPA	10	10
Methyl parathion	2	2
Metolachlor	70	70
Metribuzin	100	100
Naphthalene	20	20
Nitroguanidine	700	700
p-nitrophenol	60	60
Paraquat	30	30
Pronamide	50	50
Propachlor	90	90
Propazine	10	10
Propham	100	100
2,4,5-T	70	70
Tebuthiuron	500	500
Terbacil	90	90
Terbufos	0.9	0.9
1,1,1,2-Tetrachloroethane	70	70
1,2,3-trichloropropane	40	40
Trifluralin	5	5
Trinitroglycerol	5	5
Trinitrotoluene	2	2



Table B1. Acute Criteria for Total Ammonia Nitrogen (mg N/L)

pH	Cold-Water Fisheries ⁽¹⁾	Cool & Warm-Water Fisheries ⁽²⁾
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.6	14.4
7.8	8.1	12.1
7.9	6.7	10.1
8.0	5.6	8.4
8.1	4.6	6.9
8.2	3.8	5.7
8.3	3.1	4.7
8.4	2.5	3.8
8.5	2.1	3.2
8.6	1.7	2.6
8.7	1.4	2.2
8.8	1.2	1.8
8.9	1.0	1.5
9.0	0.8	1.3



Table B2. Chronic Criteria for Total Ammonia Nitrogen (mg N/L): Early Life Stage absent⁽³⁾⁽⁴⁾

pH	Temperature (°C)																
	0-7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30
6.5	10.8	10.1	9.5	8.9	8.3	7.8	7.3	6.8	6.4	6.0	5.3	4.6	4.1	3.6	3.1	2.8	2.4
6.6	10.7	9.9	9.3	8.7	8.2	7.7	7.2	6.7	6.3	5.9	5.2	4.6	4.0	3.5	3.1	2.7	2.4
6.7	10.5	9.8	9.2	8.6	8.0	7.5	7.1	6.6	6.2	5.8	5.1	4.5	3.9	3.5	3.0	2.7	2.3
6.8	10.2	9.5	8.9	8.4	7.9	7.4	6.9	6.5	6.1	5.7	5.0	4.4	3.8	3.4	3.0	2.6	2.3
6.9	9.9	9.3	8.7	8.1	7.6	7.2	6.7	6.3	5.9	5.5	4.8	4.3	3.7	3.3	2.9	2.5	2.2
7.0	9.6	9.0	8.4	7.9	7.4	6.9	6.5	6.1	5.7	5.3	4.7	4.1	3.6	3.2	2.8	2.4	2.1
7.1	9.2	8.6	8.0	7.5	7.1	6.6	6.2	5.8	5.4	5.1	4.5	3.9	3.5	3.0	2.7	2.3	2.0
7.2	8.7	8.2	7.6	7.2	6.7	6.3	5.9	5.5	5.2	4.9	4.3	3.7	3.3	2.9	2.5	2.2	1.9
7.3	8.2	7.7	7.2	6.7	6.3	5.9	5.6	5.2	4.9	4.6	4.0	3.5	3.1	2.7	2.4	2.1	1.8
7.4	7.6	7.2	6.7	6.3	5.9	5.5	5.2	4.8	4.5	4.3	3.7	3.3	2.9	2.5	2.2	1.9	1.7
7.5	7.0	6.6	6.2	5.8	5.4	5.1	4.8	4.5	4.2	3.9	3.4	3.0	2.6	2.3	2.0	1.8	1.6
7.6	6.4	6.0	5.6	5.3	5.0	4.6	4.3	4.1	3.8	3.6	3.1	2.7	2.4	2.1	1.9	1.6	1.4
7.7	5.8	5.4	5.1	4.7	4.4	4.2	3.9	3.7	3.4	3.2	2.8	2.5	2.2	1.9	1.7	1.5	1.3
7.8	5.1	4.8	4.5	4.2	4.4	3.7	3.5	3.2	3.0	2.8	2.5	2.2	1.9	1.7	1.5	1.3	1.1
7.9	4.5	4.2	3.9	3.7	3.5	3.2	3.1	2.8	2.7	2.5	2.2	1.9	1.7	1.5	1.3	1.1	1.0
8.0	3.9	3.7	3.4	3.2	3.0	2.8	2.6	2.5	2.3	2.2	1.9	1.7	1.5	1.3	1.1	1.0	0.8
8.1	3.4	3.1	2.9	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.6	1.4	1.2	1.1	1.0	0.8	0.7
8.2	2.9	2.7	2.5	2.4	2.2	2.1	1.9	1.8	1.7	1.6	1.4	1.2	1.1	0.9	0.8	0.7	0.6
8.3	2.4	2.3	2.1	2.0	1.9	1.7	1.6	1.5	1.4	1.3	1.2	1.0	0.9	0.8	0.7	0.6	0.5
8.4	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.7	0.7	0.6	0.5	0.4
8.5	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.4	0.4
8.6	1.4	1.4	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3
8.7	1.2	1.1	1.1	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2
8.8	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2
8.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2
9.0	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1

Table B3. Chronic Criteria for Total Ammonia Nitrogen (mg N/L): Early Life Stages present ⁽⁵⁾

pH	Temperature (°C)									
	0	14	16	18	20	22	24	26	28	30
6.5	6.6	6.6	6.0	5.3	4.6	4.1	3.6	3.1	2.8	2.4
6.6	6.5	6.5	5.9	5.2	4.6	4.0	3.5	3.1	2.7	2.4
6.7	6.4	6.4	5.8	5.1	4.5	3.9	3.5	3.0	2.7	2.3
6.8	6.2	6.2	5.7	5.0	4.4	3.8	3.4	3.0	2.6	2.3
6.9	6.1	6.1	5.5	4.8	4.3	3.7	3.3	2.9	2.5	2.2
7.0	5.9	5.9	5.3	4.7	4.1	3.6	3.2	2.8	2.4	2.1
7.1	5.6	5.6	5.1	4.5	3.9	3.5	3.0	2.7	2.3	2.0
7.2	5.3	5.3	4.9	4.3	3.7	3.3	2.9	2.5	2.2	1.9
7.3	5.0	5.0	4.6	4.0	3.5	3.1	2.7	2.4	2.1	1.8
7.4	4.7	4.7	4.3	3.7	3.3	2.9	2.5	2.2	1.9	1.7
7.5	4.3	4.3	3.9	3.4	3.0	2.6	2.3	2.0	1.8	1.6
7.6	3.9	3.9	3.6	3.1	2.7	2.4	2.1	1.9	1.6	1.4
7.7	3.5	3.5	3.2	2.8	2.5	2.2	1.9	1.7	1.5	1.3
7.8	3.1	3.1	2.8	2.5	2.2	1.9	1.7	1.5	1.3	1.1
7.9	2.8	2.8	2.5	2.2	1.9	1.7	1.5	1.3	1.1	1.0
8.0	2.4	2.4	2.2	1.9	1.7	1.5	1.3	1.1	1.0	0.8
8.1	2.1	2.1	1.9	1.6	1.4	1.2	1.1	1.0	0.8	0.7
8.2	1.7	1.7	1.6	1.4	1.2	1.1	0.9	0.8	0.7	0.6
8.3	1.5	1.5	1.3	1.2	1.0	0.9	0.8	0.7	0.6	0.5
8.4	1.2	1.2	1.1	1.0	0.9	0.7	0.7	0.6	0.5	0.4
8.5	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.4	0.4
8.6	0.9	0.9	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3
8.7	0.7	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2
8.8	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2
8.9	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2
9.0	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1

(1) *Salmonids present*: $CMC = [0.275 / (1 + 10^{7.204 - pH})] + [39.0 / (1 + 10^{pH - 7.204})]$

(2) *Salmonids absent*: $CMC = [0.411 / (1 + 10^{7.204 - pH})] + [58.4 / (1 + 10^{pH - 7.204})]$

(3) Without sufficient and reliable data, it is assumed that Early Life Stages are present and must be protected at all times of the year.

(4) Early Life Stages absent

$$CCC = [0.0577 / (1 + 10^{7.688 - pH})] + [2.487 / (1 + 10^{pH - 7.688})] * 1.45 * 10^{0.028 * (25 - \text{MAX}(T, 7))}$$

(5) Early Life Stages present

$$CCC = [0.0577 / (1 + 10^{7.688 - pH})] + [2.487 / (1 + 10^{pH - 7.688})] * \text{MIN}(2.85, 1.45 * 10^{0.028 * (25 - T)})$$



Table C
Waters Designated for Cold-Water Fishery

Water Body	Miles/Acres	From	To	County(ies)
Barren Fork	2.0	Mouth	20,31N,4W	Shannon
Bee Creek	1.0	Mouth	Hwy. 65	Taney
Bender Creek	0.7	Mouth	10,31N,9W	Texas
Bennett Springs Creek	2.0	Mouth	Bennett Springs	Laclede
Blue Springs Creek	4.0	Mouth	2,39N,3W	Crawford
Bryant Creek	1.0	3,23N,12W	34,24N,12W	Ozark
Bryant Creek	6.0	19,27N,14W	8,27N,15W	Douglas
Buffalo Creek	10.0	State line	5,23N,33W	McDonald
Bull Creek	5.0	Mouth	34,24N,21W	Taney
Bull Shoals Lake	9,000.0 ac.	21/34,20N,15W	---	Ozark
Capps Creek	4.0	Mouth	17,25N,28W	Newton-Barry
Cedar Creek	1.0	21,26N,32W	28,26N,32W	Newton
Center Creek	3.0	24,27N,29W	17,27N,28W	Lawrence
Chesapeake Creek	3.0	Mouth	29,28N,25W	Lawrence
Crane Creek	15.0	8,25N,23W	24,26N,25W	Stone-Lawrence
Current River	19.0	24,31N,6W	Montauk Spring	Shannon-Dent
Dogwood Creek	2.3	Mouth	State line	Stone
Dry Creek	4.0	Mouth	14,37N,3W	Crawford
Eleven Point River	33.5	State line	36,25N,4W	Oregon
Flat Creek	3.0	9,23N,27W	21,23N,27W	Barry
Goose Creek	4.0	Mouth	10,28N,25W	Lawrence
Greer Spring Branch	1.0	Mouth	36,25N,4W	Oregon
Hickory Creek	4.5	13,25N,31W	28,25N,31W	Newton
Hobbs Hollow	2.7	Mouth	State line	Stone
Horse Creek	2.2	Mouth	23,35N,8W	Dent
Hunter Creek	5.0	22,26N,15W	20,26N,14W	Douglas
Hurricane Creek	1.5	Mouth	30,24N,12W	Ozark
Hurricane Creek	3.2	Mouth	22,25N,3W	Oregon
Indian Creek	1.4	Mouth	17,21N,23W	Stone
Indian Creek	20.0	Mouth	36,39N,01W	Franklin-Washington
Johnson Creek	3.0	Mouth	36,29N,26W	Lawrence
Joyce Creek	1.0	17,24N,28W	16,24N,28W	Barry
L. Flat Creek	3.5	Mouth	25,25N,27W	Barry
L. Piney Creek	15.0	25,37N,9W	4,35N,8W	Phelps
L. Piney Creek	4.0	04,35N,08W	21,35N,08W	Phelps
L. Sinking Creek	2.2	Mouth	33,32N,4W	Dent
Lake Taneycomo	1,730.0 ac.	8,23N,20W	---	Taney
Lyman Creek	1.0	Mouth	30,40N,3W	Crawford
Maramec Spring Branch	1.0	Mouth	1,37N,6W	Phelps
Meramec River	10.0	22,38N,5W	Hwy. 8	Crawford
Mill Creek	1.5	Mouth	11,40N,8W	Maries
Mill Creek	1.5	Mouth	9,36N,18W	Dallas
Mill Creek	5.0	29,37N,9W	Yelton Spring	Phelps
N. Fork White River	23.0	09,22N,12W	34,25N,11W	Ozark
Niangua River	6.0	11,35N,18W	Bennett Sp. Creek	Dallas
Roaring River	7.0	Mouth	34,22N,27W	Barry
Roark Creek	3.0	Mouth	36,23N,22W	Taney
Roubidoux Creek	4.0	Mouth	25,36N,12W	Pulaski
S. Indian Creek	9.0	24,24N,31W	1,23N,30W	Newton
Schafer Spring Creek	2.0	Mouth	20,32N,6W	Dent
Shoal Creek	1.0	Mouth	18,41N,17W	Morgan
Shoal Creek	7.0	09,25N,29W	16,22N,21W	Newton
Spring Branch	1.0	Mouth	18,41N,17W	Morgan
Spring Creek	5.0	Mouth	14,23N,11W	Ozark
Spring Creek	6.5	Mouth	31,35N,9W	Phelps
Spring Creek	2.5	Mouth	4,41N,2W	Franklin
Spring Creek	5.5	Mouth	12,26N,24W	Stone
Spring Creek	6.0	Mouth	06,24N,13W	Douglas-Ozark
Spring Creek	2.5	Mouth	26,25N,11W	Douglas
Spring Creek	4.0	Mouth	30,25N,4W	Oregon
Spring River	11.2	13,27N,27W	20,26N,26W	Lawrence
Stone Mill Spring Branch	0.2	Mouth	Spring	Pulaski
Terrell Creek	2.0	Mouth	2,27N,23W	Christian
Tory Creek	2.5	Mouth	27,26N,22W	Stone-Christian



Table C
Waters Designated for Cold-Water Fishery

Water Body	Miles/Acres	From	To	County(ies)
Turkey Creek	2.0	Mouth	16,22N,21W	Taney
Turkey Creek	1.0	Mouth	17,23N,15W	Ozark
Turnback Creek	14.0	35,30N,26W	24,28N,25W	Dade-Lawrence
Warm Fork Spring River	3.0	6,22N,5W	30,23N,5W	Oregon
Whittenburg Creek	2.5	Mouth	Hwy. 8	Crawford
Williams Creek	1.0	Mouth	28,28N,27W	Lawrence
Woods Fork Bull Creek	1.0	15,25N,21W	15,25N,21W	Christian
Yadkin Creek	3.0	Mouth	9,37N,4W	Crawford
Yankee Branch	1.0	Mouth	10,36N,4W	Crawford

Table D
Outstanding National Resource Waters

Water Body	Location	County(ies)
Current River	Headwaters to Northern Ripley Co. Line Sec. 22,32N,07W to Sec. 15,25N,01E	Dent to Ripley
Jacks Fork River	Headwaters to Mouth Sec. 29,28N,07W to Sec. 9,15,29N,03W	Texas to Shannon
Eleven Point River	Headwaters to Hwy. 142 Sec. 32,25N,05W to Sec. 21,22N,02W	Oregon

Table E
Outstanding State Resource Waters

Water Body	Miles/Acres	Location	County(ies)
Baker Branch	4 mi.	Taberville Prairie	St. Clair
Bass Creek	1 mi.	in Three Creek Conservation Area	Boone
Big Buffalo Creek	1.5 mi.	Big Buffalo Creek Conservation Area	Benton-Morgan
Big Creek	5.3 mi.	Sam A. Baker State Park	Wayne
Big Sugar Creek	7 mi.	Cuivre River State Park	Lincoln
Big Lake Marsh	150 ac.	Big Lake State Park	Holt
Blue Springs Creek	4 mi.	Blue Spring Creek Conservation Area	Crawford
Bonne Femme Creek	2 mi.	Three Creeks Conservation Area	Boone
Brush Creek	0.7 mi.	Bonanza Conservation Area	Caldwell
Bryant Creek	1.5 mi.	Bryant Creek Natural Area in Rippee Conservation Area	Ozark/Douglas
Bull Creek	8 mi.	Mark Twain National Forest Sec. 24,25N,21W to Sec. 22,26N,20W	Christian
Cathedral Cave Branch	5 mi.	Onondaga Cave State Park	Crawford
Chariton River	9.8 mi.	Rebels Cove Conservation Area	Putnam-Schuyler
Chloe Lowry Marsh	40 ac.	Chloe Lowry Marsh Conservation Area	Mercer
Coakley Hollow	1.5 mi.	Lake of the Ozarks State Park	Camden
Coonville Creek	2 mi.	St. Francois State Park	St. Francois
Courtois Creek	12 mi.	Mouth to Hwy. 8	Crawford
Crabapple Creek	1.0 mi.	Bonanza Conservation Area	Caldwell
Devils Ice Box Cave Branch	1.5 mi.	Rock Bridge State Park	Boone
East Fork Black River	3 mi.	Johnson's Shut-Ins State Park	Reynolds
First Nicholson Creek (East Drywood Creek)	2 mi.	Prairie State Park	Barton
Gan's Creek	3 mi.	Rock Bridge State Park	Boone
Huzzah Creek	6 mi.	Mouth to Hwy. 8	Crawford
Indian Creek	17.5 mi.	Mark Twain National Forest	Douglas-Howell
Ketchum Hollow	1.5 mi.	Roaring River State Park	Barry
Little Piney Creek	25 mi.	Mouth to 21,35N,08W	Phelps
Little Black River	3 mi.	Mud Puppy Natural History Area S22, T24N, R3E to S25, T24N, R3E	Ripley
Log Creek	0.4 mi.	Bonanza Conservation Area	Caldwell
Meramec River	8 mi.	Adjacent to Meramac State Park	Crawford/Franklin
Meramec River	3 mi.	Adjacent to Onondaga and Huzzah State Forest	Crawford
Mill Creek	5 mi.	Mark Twain National Forest	Phelps



Table E
Outstanding State Resource Waters

Water Body	Miles/Acres	Location	County(ies)
N. Fork White River	5.5 mi.	Mark Twain National Forest	Ozark
Noblett Creek	5 mi.	Above Noblett Lake, Mark Twain National Forest	Douglas-Howell
Onondaga Cave Branch	0.6 mi.	Onondaga Cave State Park	Crawford
Pickle Creek	3 mi.	Hawn State Park	Ste. Genevieve
S. Prong L. Black River	2 mi.	In Little Black Conservation Area	Ripley
Shoal Creek	0.5 mi.	Bonanza Conservation Area	Caldwell
Spring Creek	17 mi.	Mark Twain National Forest	Douglas
Spring Creek	6.5 mi.	Mark Twain National Forest	Phelps
Taum Sauk Creek	5.5 mi.	Johnson's Shut-Ins State Park Addition S23,T33N,R2E to S5,T33N,R3E	Reynolds-Iron
Turkey Creek	4.6 mi.	In Three Creeks Conservation Area	Boone
Van Meter Marsh	80 ac.	Van Meter State Park	Saline
Whetstone Creek	5.1 mi.	Whetsone Creek Conservation Area	Callaway

Table F
Metropolitan No-Discharge Streams

St. Louis Area

Stream	Location
Gravois Creek	Entire length
Creve Coeur Creek	Creve Coeur Lake and stream above lake
Fee Fee Creek	Entire length
Coldwater Creek	Entire length
Dardenne Creek	Route DD—I-70 Highway—St. Charles County
Belleau Creek	Headwaters—0.1 mi. west of east edge of S22,T47N,R3E
Fishpot Creek	Entire length
Grand Glaize Creek	Entire length

Kansas City Area

Stream	Location
Indian Creek	Kansas state line to confluence with Blue River
Blue River	Kansas state line to 59th Street, Kansas City
Blue River (except combined sewer overflow from Brush Creek)	59th Street to Guinotte Dam
Little Blue River	Entire length

Springfield Area

Stream	Location
Pearson Creek	Entire length

Table G-Lake Classifications and Use Designations

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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDH	WBC	SCR	DWS	IND
8-20-13 MUDD V1.0	L3	26517.0	Statewide	Statewide	X	X		B	X		
Adrian Reservoir	L1	45.0	03,41N,31W	Bates	X	X		B			X
Agate Lake	L3	210.7	13,60N,06W	Lewis	X	X		A	X		
Amarugia Lake	L3	39.0	10/11,43N,32W	Cass	X	X		B	X		
Anderson's Whippoorwill Farm Lake	L3	30.0	SW SE 28,28N,11E	Stoddard	X	X		B			
Anthonies Mill Lake	L3	91.0	SW SW 19,39N,01W	Washington	X	X		B	X		
Antimi Lake	L3	2.0	NE NE 3,48N,12W	Boone	X	X		B			
Apollo Lake	L3	15.0	21,36N,05E	St. Francois	X	X		B	X		
Appleton City Lake	L1	35.0	12,39N,29W	Bates	X	X		B			X
Archie Lakes	L1	7.3	SESE28,43N,31W	Cass	X	X		B			X
Armstrong Lake	L1	8.0	NE NE 28,52N,16W	Howard	X	X		B			X
Athens State Park Lake	L3	8.0	30,67N,07W	Clark	X	X		A	X		
Atkinson Lake	L3	434.0	NW SE06,37N,28W	St. Clair/Vernon	X	X		A	X		
Atlanta City Lake	L1	17.0	SE SW29,59N,14W	Macon	X	X		B			X
Austin Community Lake	L3	21.0	30,29N,11W	Texas	X	X		A	X		
Baha Trail Lake	L3	16.0	05,39N,01E	Washington	X	X		B	X		
Baring Country Club Lake	L1	81.0	SE26,63N,12W	Knox	X	X		A	X		X
Bass Lake	L3	29.0	13,47N,08W	Callaway	X	X		A	X		
Bean Lake	L3	420.0	12,13,14,23, 24, 54N,37W	Platte	X	X		B	X		
Bear Creek Watershed Lake	L3	26.7	6,63N,09W	Clark	X	X		B	X		
Beaver Lake	L3	14.0	22,25N,04E	Butler	X	X		A			
Bee Tree Lake	L3	10.0	03,42N,06E	St. Louis	X	X		B	X		
Belcher Branch Lake	L3	42.0	08/17,55N,34W	Buchanan	X	X		B	X		
Belle City Lake	L3	6.0	20,41N,07W	Maries	X	X		B			
Ben Branch Lake	L3	37.0	15/14,44N,08W	Osage	X	X		B	X		
Berndt Lake	L1	21.0	NE SW30,66N,23W	Mercer	X	X		B			X
Bevier Lake	L3	5.0	S SE,14,57N,15W	Macon	X	X		B			
Big Buffalo C.A. Lakes	L3	7.9	2,12,41N,20W	Benton	X	X		B			
Big Lake	L3	666.0	18&19,30,61N,39W	Holt	X	X		A	X		
Big Oak Tree S.P. Lake	L3	33.0	14,23N,16E	Mississippi	X	X		B			
Big Soldier Lake	L3	5.0	36,50N,19W	Saline	X	X		B	X		
Bilby Ranch Lake	L3	95.0	13/24,64N,38W	Nodaway	X	X		B	X		
Binder Lake	L3	127.0	SW SE36,45N,13W	Cole	X	X		B	X		
Blind Pony Lake	L3	96.0	NW SE18,49N,22W	Saline	X	X		B	X		
Bloodland Lake (Ft. Wood)	L3	38.1	04,34N,11W	Pulaski	X	X		B	X		
Blue Mountain Lake	L1	14.0	NW SE,09,33N,5E	Madison	X	X		B			X
Blue Springs Lake	L3	642.0	33,49N,31W	Jackson	X	X		A	X		
Blues Pond	L3	10.0	09,37N,08W	Phelps	X	X		B	X		
Bluestem Lake	L3	13.0	22,47N,31W	Jackson	X	X		B	X		
Bo Co Mo Lake	L3	140.0	NW NE10,49N,13W	Boone	X	X		B	X		

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 WBC Whole Body Contact Recreation
 SCR Secondary Contact Recreation
 DWS Drinking Water Supply
 IND Industrial

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Table G-Lake Classifications and Use Designations

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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDF	WBC	SCR	DWS	IND
Bodarc Lake	L3	13.0	23,47N,31W	Jackson	X	X		B	X		
Boggs Lake	L3	32.0	21-28,44N,05W	Gasconade	X	X		B	X		
Bonne Aqua Lake	L3	6.0	SE NE 26,38N,04E	St. Francois	X	X		B			
Bonne Terre City Lake	L3	10.0	SUR 467,37N,04E	St. Francois	X	X		B			
Bowling Green Lake - Old	L1	7.0	NE NE30,53N,02W	Pike	X	X		B			X
Bowling Green Reservoir	L1	41.0	W NW29,53N,02W	Pike	X	X		B	X		X
Brays Lake	L3	162.0	NE NW35,37N,08W	Phelps	X	X		B	X		
Breckenridge Lake	L1	13.0	NE SW3,57N,26W	Caldwell	X	X		B	X		X
Brookfield Lake	L1	120.0	SE SE33,58N,19W	Linn	X	X		B			X
Browning Lake	L3	120.0	22,25,26,27,3N,22E	Buchanan	X	X		B	X		
Bucklin Lake	L1	17.0	11,57N,18W	Linn	X	X		B			X
Buffalo Bill Lake	L3	45.0	28,58N,31W	DeKalb	X	X		B	X		
Bull Shoals Lake	L2	9000.0	21/34,20N,15W	Ozark	X	X	X	A	X		
Burlington Lake	L3	21.0	34,57N,30W	Clinton	X	X		B			
Busch W.A.- Kraut Run Lake	L3	164.0	SUR 56 (NW NE23,46N,02E)	St. Charles	X	X		B			
Busch W.A. No. 35 Lake	L3	51.0	SUR 1669 (NE NE30,46N,03E)	St. Charles	X	X		B			
Bushwacker Lake	L3	148.0	26,34N,32W	Vernon	X	X		B	X		
Butler Lake	L1	71.0	NW NE14,40N,32W	Bates	X	X		B			X
Butterfly Lake	L3	65.0	NW NE34,36N,07E	Ste. Genevieve	X	X		B			
C and A Lake	L3	39.0	25,51N,09W	Audrain	X	X		B			
Callaway Lake	L3	135.0	06,45N,02E	St. Charles	X	X		A	X		
Cameron Lake #1	L1	25.0	SW SW10,57N,30W	DeKalb	X	X		B	X		X
Cameron Lake #2	L1	31.0	SW SW10,57N,30W	DeKalb	X	X		B	X		X
Cameron Lake #3	L1	92.0	NW NE09,57N,30W	DeKalb	X	X		B	X		X
Cameron Lake #4 (Grindstone Reservoir)	L1	173.0	NE NW 08,57N,30W	DeKalb	X	X		B			X
Camp Solidarity Lake	L3	10.0	24,43N,02E	Franklin	X	X		B	X		
Carrollton Recreation Lake	L3	61.0	SE NW07,52N,23W	Carroll	X	X		B	X		
Catclaw Lake	L3	42.0	14,47N,31W	Jackson	X	X		B	X		
Cedar Hill Lakes	L3	22.6	35,42N,03E	Jefferson	X	X		A	X		
Cedar Lake	L3	21.0	35,48N,13W	Boone	X	X		A	X		
Cedar Lake	L3	45.0	SE SE 21,37N,05E	St. Francois	X	X		A	X		
Charity Lake	L3	9.0	NW SE 1,65N,41W	Atchison	X	X		B	X		
City Lake #1 - Perry	L1	16.0	NW NW34,54N,07W	Ralls	X	X		B			X
City Lake #2 - Perry	L1	7.0	NW34,54N,07W	Ralls	X	X		B			X
City Lake Harrisonville	L1	28.0	34,45N,31W	Cass	X	X		B	X		X
Clarence Lake #1	L1	20.0	15,57N,12W	Shelby	X	X		B	X		X
Clarence Lake #2	L1	31.0	15,57N,12W	Shelby	X	X		B	X		X
Clearwater Lake	L2	1635.0	NW NE06,28N,03E	Wayne/Reynolds	X	X		A	X		
Cleveland Reservoir	L1	10.0	29,45N,33W	Cass	X	X		B			X
Clover Dell Park Lake	L3	10.0	13,45N,22W	Pettis	X	X		B	X		
Cole Lake	L3	40.0	SE10,38N,04E	Jefferson	X	X		A	X		

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 Human Health Fish Consumption
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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDF	WBC	SCR	DWS	IND
Conner O. Fewell C.A. Lakes	L3	14.0	32,43N,25W	Henry	X	X		B	X		
Cool Valley Lake	L3	19.0	09,40N,02E	Franklin	X	X		B	X		
Cooley Lake	L3	380.0	02,03,11, 51N,30W	Clay	X	X		B			
Coot Lake	L3	20.0	22,47N,31W	Jackson	X	X		B	X		
Cosmo-Bethel Lake	L3	6.0	NW36,48N,13W	Boone	X	X		B			
Cottontail Lake	L3	22.0	14,47N,31W	Jackson	X	X		B	X		
Council Bluff Lake	L3	423.0	23,35N,01E	Iron	X	X		A	X		
Crane Lake	L3	109.0	W33,32N,04E	Iron	X	X		B	X		
Creighton Lake	L1	18.0	NW SE,14,43N,29W	Cass	X	X		B			X
Crescent Lake	L3	8.0	NE 02,41N,01W	Franklin	X	X		B	X		
Creve Coeur Lake	L3	327.0	20,46N,05E	St. Louis	X	X		B	X		
Crowder St. Park Lake	L3	18.0	12,61N,25W	Grundy	X	X		A			
Crystal Lake	L3	122.0	NW SW32,53N,29W	Ray	X	X		A	X		X
Cut-Off Lake	L3	148.5	01,12,57N,36W	Buchanan	X	X		B			
Cut-Off Lake	L3	674.0	26,27,34,35,53N,19W	Chariton	X	X		B			
D C Rogers Lake	L1	195.0	NW NW10,50N,16W	Howard	X	X		B	X		X
Davis Lake	L3	44.0	NE NW15,50N,16W	Howard	X	X		B			
Dearborn Reservoir	L1	7.0	31,55N,34W	Buchanan	X	X		B	X		X
Deer Ridge Community Lake	L3	39.0	18,62N,08W	Lewis	X	X		B	X		
Dexter City Lake	L3	11.0	22,25N,10E	Stoddard	X	X		B			
DiSalvo Lake	L3	210.0	SW NE19,35N,04E	St. Francois	X	X		B	X		
Downing Reservoir	L1	22.9	SW SE17,66N,13W	Schuyler	X	X		B			X
Drexel City Reservoir South	L1	51.0	7,42N,33W	Bates	X	X		B			X
Drexel Lake	L1	28.0	6, 42N,33W	Bates	X	X		B			X
Duck Creek	L3	1730.0	31,28N,09E; 5, 27N, 9E	Wayne	X	X		B	X		
Eagle Sky Lake	L3	62.0	NW NW35,30N,04E	Wayne	X	X		B	X		
Eagleville Lake	L1	40.0	33,66N,27W	Harrison	X	X		A	X		X
East Arrowhead Lake	L3	55.0	SE SE18,23N,08W	Howell	X	X	X	A			
Edina Lake	L1	9.0	07,62N,11W	Knox	X	X		B	X		X
Edina Reservoir	L1	51.0	12,62N,11W	Knox	X	X		B	X		X
Edwin A Pape Lake	L1	272.5	20,48N,24W	Lafayette	X	X		B	X		X
Ella Ewing Community Lake	L3	15.0	21,64N,10W	Scotland	X	X		A			
Elmwood City Lake	L1	197.0	NW 35,63N,20W	Sullivan	X	X		B			X
Elsie Lake	L3	17.0	30,37N,02E	Washington	X	X		A	X		
Ethel Lake	L1	23.0	NE NW36,59N,17W	Macon	X	X		B			X
Ewing Lake	L1	43.0	06,60N,07W	Lewis	X	X		B	X		X
Fawn Lake	L3	26.0	13,43N,02W	Franklin	X	X		B	X		
Fellows Lake	L1	800.0	NW NE22,30N,21W	Greene	X	X		A	X		X
Finger Lakes	L3	118.0	19,30,31,50N,12W,24,25,36,50N 13W	Boone	X	X		A			
Flight Lake	L3	100.0	26,36N,32W	Vernon	X	X		B			

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 CDF (CDH) Cold Water Fishery
 WBC Whole Body Contact Recreation
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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDF	WBC	SCR	DWS	IND
Forest Lake	L1	580.0	SE SW14,62N,16W	Adair	X	X		A			X
Fountain Grove Lakes	L3	1366.3	35,57N,22W	Linn	X	X		B	X		
Fourche Lake	L3	49.0	22,23N,01W	Ripley	X	X		A	X		
Fox Valley Lake	L3	89.0	27,66N,08W	Clark	X	X		B	X		
Foxboro Lake	L3	22.0	14,42N,04W	Franklin	X	X		B	X		
Fredricktown City Lake	L1	80.0	06,33N,07E	Madison	X	X		B			X
Freeman Lake	L1	13.0	SW SW18,44N,32W	Cass	X	X		B			X
Frisco Lake	L3	5.0	SE SE 02,37N,08W	Phelps	X	X		B			
Garden City Lake	L1	26.0	31,44N,29W	Cass	X	X		B			X
Garden City New Lake	L1	39.0	NW18,43N,29W	Cass	X	X		B			X
Gerald City Lake	L3	5.0	12,42N,04W	Franklin	X	X		B			
Glover Spring Lake	L3	23.0	13,47N,09W	Callaway	X	X		B			
Golden Eagle Lake	L3	105.0	SE SW16,48N,04W	Montgomery	X	X		B			
Goose Creek Lake	L3	308.3	NW NW25,38N,06E	Ste. Genevieve/St. Francois	X	X		A	X		
Gopher Lake	L3	38.0	23,47N,31W	Jackson	X	X		B	X		
Gower Lake	L1	11.0	10,55N,33W	Clinton	X	X		B			X
Green City Lake	L1	57.0	SE NE16,63N,18W	Sullivan	X	X		B			X
Green City Lake (Old)	L1	60.0	SE18,63N,18W	Sullivan	X	X		A			X
Hager Lake	L3	9.0	SUR 2969,35N,05E	St. Francois	X	X		B			
Hamilton Lake	L1	80.0	SW SW15,57N,28W	Caldwell	X	X		B	X		X
Harmony Mission Lake	L3	96.0	15,38N,32W	Bates	X	X		B	X		
Harrison County Lake	L1	280.0	17/30,65N,28W	Harrison	X	X		B			X
Harrisonville City Lake	L1	419.0	SW SW26,46N,31W	Cass	X	X		B	X		X
Hazel Creek Lake	L1	453.0	SW SW31,64N,15W	Adair	X	X		B			X
Hazel Hill Lake	L3	62.0	27,47N,26W	Johnson	X	X		B	X		
Helvey Park Lake	L1	11.0	26,53N,33W	Clay	X	X		B			X
Henke Lake	L3	70.0	SE SE20,46N,09W	Callaway	X	X		B			
Henry Sever Lake	L3	158.0	NE NE14,60N,10W	Knox	X	X		A	X		
Hermit Hollow Lake	L3	8.0	29,44N,02E	Franklin	X	X		B	X		
Hi Point Lake	L3	3.0	24,39N,01E	Washington	X	X		B			
Higbee Lake	L1	13.0	SE SW09,52N,14W	Randolph	X	X		B			X
Higginsville Reservoir (North)	L1	47.0	NE SW04,49N,25W	Lafayette	X	X		B	X		X
Higginsville Reservoir (South)	L1	147.1	SW NE09,49N,25W	Lafayette	X	X		B	X		X
Holden City Lake	L1	290.2	29,46N,28W	Johnson	X	X		B	X		X
Holden Lake	L3	11.0	12,45N,28W	Johnson	X	X		B	X		
Holden Lake	L3	11.0	07,45N,27W	Johnson	X	X		B			
Holiday Acres Lake	L3	206.1	SE SW17,55N,14W	Randolph	X	X		B			
Horseshoe Lake	L3	56.0	15,56N,36W	Buchanan	X	X		B			
Hough Park Lake	L3	10.0	19,44N,11W	Cole	X	X		B			
Houston Lake	L3	16.0	NW 33,51N,33W	Platte	X	X		A	X		

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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDF	WBC	SCR	DWS	IND
Howell Mill Lakes	L3	97.0	17,36N,01E	Washington	X	X		A	X		
HS Truman Lake	L2	55600.0	07,40N,22W	Benton	X	X		A	X	X	
Hunnell Lake	L3	228.0	NW SW25,57N,09W	Shelby	X	X		B	X		
Hurdland Severs Lake	L3	13.0	1,61N,13W	Knox	X	X		A	X		
Indian Creek Community Lake	L3	185.0	15/27,59N,25W	Livingston	X	X		B	X		
Indian Lake	L3	279.0	22,15,23,39N,05W	Crawford	X	X		A	X		
Iron Mountain Lake	L3	79.0	SE SW32,35N,04E	St. Francois	X	X		B	X		
Izaak Walton Lake	L3	11.0	32,36N,31W	Vernon	X	X		B	X		
Jackass Bend	L3	200.0	32,28,21-19,51N,29W	Ray/Jackson	X	X		B	X		X
Jackrabbit Lake	L3	25.0	15,47N,31W	Jackson	X	X		B	X		
Jamesport City Lake	L1	16.0	22,60N,26W	Daviess	X	X		B			X
Jamesport Community Lake	L1	27.0	NE 20,60N,26W	Daviess	X	X		A	X		X
Jasper Lake	L3	43.0	12,60N,06W	Lewis	X	X		A	X		
Jaycee Park Lake	L3	8.0	17,44N,12W	Cole	X	X		B			
Jo Lee Lake	L3	8.0	NESE 19,36N,5E	St. Francois	X	X		B	X		
Junges Lake	L3	37.0	10,41N,21W	Benton	X	X		A	X		
Kahrs-Boger Park Lake	L3	2.0	15,44N,20W	Pettis	X	X		B	X		
Kellogg Lake	L3	22.0	34,29N,31W	Jasper	X	X		A	X		
King City Lake (South)	L1	29.0	SW SW34,61N,32W	Gentry	X	X		B			X
King City New Reservoir	L1	25.4	28,61N,32W	Gentry	X	X		B			X
King City Old Reservoir	L1	12.0	SW NE28,61N,32W	Gentry	X	X		B			X
King Lake	L3	204.0	13,60N,32W	DeKalb	X	X		A	X		X
Kiwanis Lake	L3	4.0	SW23,51N,9W	Audrain	X	X		B			
Klontz Lake	L3	14.0	02,39N,04W	Crawford	X	X		A	X		
Knob Noster St. Park Lakes	L3	24.0	29/30,46N,24W	Johnson	X	X		B			
L. Prairie Comm. Lake	L3	95.0	SE SE21,38N,7W	Phelps	X	X		B	X		
La Plata Lake - New	L1	81.0	NW 14,60N,14W	Macon	X	X		B			X
La Plata Lake - Old	L1	22.0	09,60N,14W	Macon	X	X		B			X
Labelle Lake #1	L1	18.0	16,61N,09W	Lewis	X	X		B	X		X
Labelle Lake #2	L1	98.0	NW NE16,61N,09W	Lewis	X	X		B	X		X
Lake Allaman	L3	6.0	NE 24,56N,30W	Clinton	X	X		A	X		
Lake Annette	L3	65.0	01,44N,33W	Cass	X	X		B	X		
Lake Arrowhead	L3	101.0	18,54N,30W	Clinton	X	X		A	X		
Lake Arrowhead	L3	23.0	NW NE 31, 42N, 2E	Franklin	X	X		A	X		
Lake Briarwood	L3	69.0	SW NE33,40N,04E	Jefferson	X	X		A	X		
Lake Champetra	L3	58.0	NW13,45N,12W	Boone	X	X		A	X		
Lake Cherokee	L3	6.0	14,36N,03E	Washington	X	X		B	X		
Lake Contrary	L3	291.0	26,27,35,57N,36W	Buchanan	X	X		A	X		
Lake Fond du Lac	L3	24.0	SUR 3011,43N,05E	Jefferson	X	X		A	X		
Lake Forest	L3	81.0	SUR 2046,38N,07E	Ste. Genevieve	X	X		B			

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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDH	WBC	SCR	DWS	IND
Lake Girardeau	L3	144.0	SW SW09,30N,11E	Cape Girardeau	X	X		B	X		
Lake Jacomo	L3	998.0	NE NW11,48N,31W	Jackson	X	X		A	X		
Lake Killarney	L3	61.0	NW NW01,33N,04E	Iron	X	X		A	X		
Lake Lacawanna	L3	10.0	SE SE 11,38N,05E	St. Francois	X	X		B	X		
Lake Lincoln	L3	88.0	SW SE08,49N,01E	Lincoln	X	X		A	X		
Lake Lochaweenoo	L3	39.0	24,47N,08W	Callaway	X	X		A	X		
Lake Loraine	L3	37.0	SUR 1970, 41N,04E	Jefferson	X	X		A	X		
Lake Lotawana	L3	487.0	SE SE29,48N,30W	Jackson	X	X		A	X		
Lake Lucern	L3	41.0	NE SE06,46N,01W	Warren	X	X		A			
Lake Luna	L3	17.0	NE 4,44N,31W	Cass	X	X		B	X		
Lake Marie	L3	60.0	NE NW 36,66N,24W	Mercer	X	X		A			
Lake McGinness	L3	50.0	NW20,55N,30W	Clinton	X	X		B			
Lake Montowese	L3	39.0	27,43N,04E	Jefferson	X	X		A	X		
Lake Nehai Tonkayea	L3	228.0	NW NE11,55N,18W	Chariton	X	X		A			
Lake Nell	L3	24.0	22,47N,31W	Jackson	X	X		B	X		
Lake Niangua	L3	256.0	19,37N,17W	Camden	X	X		A	X		
Lake Northwood	L3	77.0	SE NE33,43N,05W	Gasconade	X	X		A			
Lake of the Oaks	L3	53.0	SE SW07,63N,06W	Clark	X	X		A	X		
Lake of the Ozarks	L2	59520.0	SE SE19,40N,15W	Camden	X	X		A	X		
Lake of the Woods	L3	3.0	NE SW 02,48N,12W	Boone	X	X		B			
Lake Paho	L3	273.0	NE SE25,65N,25W	Mercer	X	X		B			
Lake Serene	L3	59.0	NW NE03,42N,02E	Franklin	X	X		A	X		
Lake Sherwood	L3	120.0	SW SE11,45N,01W	Warren	X	X		A			
Lake Showme	L1	214.0	15,65N,12W	Scotland	X	X		B		X	
Lake Springfield	L3	293.0	19,28N,21W	Greene	X	X		B	X		X
Lake St. Clair #1	L3	52.0	SW SE02,41N,01W	Franklin	X	X		A	X		
Lake St. Louis	L3	444.0	SUR 54 (NE SW26,47N,02E)	St. Charles	X	X		A			
Lake Ste. Louise	L3	71.0	SUR 929 (SW SW27,47N,02E)	St. Charles	X	X		A			
Lake Taneycomo	L2	2118.6	SW NE8,23N,20W	Taney	X	X	X	A	X	X	
Lake Tapawingo	L3	83.0	NE NE34,49N,31W	Jackson	X	X		A	X		
Lake Thunderbird	L3	33.0	NE,NW 5,41N,01E	Franklin	X	X		A	X		
Lake Thunderhead	L1	859.0	NE NE15,66N,19W	Putnam	X	X		A	X	X	
Lake Timber Ridge	L3	35.0	SW SE 16,43N,06W	Gasconade	X	X		A	X		
Lake Tishomingo	L3	115.0	NE SE5,41N,04E (SUR 3027)	Jefferson	X	X		A	X		
Lake Tom Sawyer	L3	4.0	04,54N,08W	Monroe	X	X		A			
Lake Torino	L3	7.0	20,42N,02E	Franklin	X	X		B	X		
Lake Tywappity	L3	43.0	SW SE08,29N,13E	Scott	X	X		A			
Lake Viking	L1	552.0	09,59N,28W	Daviess	X	X		A	X	X	
Lake Wanda Lee	L3	97.0	SUR 884, 37N, 7E	Ste. Genevieve	X	X		A			
Lake Wappapello	L2	8200.0	SE NE3,26N,07E	Wayne/Butler	X	X		A	X		
Lake Wauwanoka	L3	93.0	SE NW01,40N,04E	Jefferson	X	X		A	X		

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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDF	WBC	SCR	DWS	IND
Lake Winnebago	L3	272.0	NE NW09,46N,31W	Cass	X	X		A	X		
Lakeview Park Lake	L3	25.0	SW35,51N,09W	Audrain	X	X		B			
Lakewood Lakes	L3	279.0	NE NE07,48N,31W & SW SW 5, 48N, 31W	Jackson	X	X		A	X		
Lamar Lake	L1	148.0	SW NW32,32N,30W	Barton	X	X		B			X
Lamine River C.A. Lakes	L3	37.0	25,26,27,36,46N,19W; 2,11,45N,19W; 7,18,45N,18W.	Cooper/Morgan	X	X		B	X		
Lancaster City Lake - New	L1	56.0	23,66N,15W	Schuyler	X	X		B			X
Lancaster Lake - Old	L1	23.0	SW NE14,66N,15W	Schuyler	X	X		B			X
Lane Lake	L3	10.0	32,37N,01W	Washington	X	X		A	X		
Lawson City Lake	L1	25.0	31,54N,29W	Ray	X	X		A	X		X
Leisure Lake	L3	38.0	NE SE05,61N,25W	Grundy	X	X		A			
Leisure Lake	L3	45.0	33,48N,08W	Callaway	X	X		A	X		
Lewis & Clark Lake	L3	403.0	27,28,33,55N,37W	Buchanan	X	X		A	X		
Lewis Lake	L3	6.0	SE, NE 10,26N,11E	Stoddard	X	X		B			
Lewistown Lake	L1	35.0	NW SW08,61N,08W	Lewis	X	X		B	X		X
Liberty Park Lake	L3	1.0	04,45N,21W	Pettis	X	X		B			
Limpp Community State Lake	L3	27.0	29,61N,32W	Gentry	X	X		B	X		
Linneus Lake	L1	17.0	NE SW36,59N,21W	Linn	X	X		B	X		X
Lions Lake	L3	11.0	16,44N,01W	Franklin	X	X		B	X		
Lions Lake	L3	8.0	SW SE 26,46N,26W	Johnson	X	X		B	X		
Lisle Pond	L3	22.0	05,43N,33W	Cass	X	X		B	X		
Little Compton Lake	L3	36.0	29/32,55N,21W	Carroll	X	X		B	X		
Little Dixie Lake	L3	176.0	SW SE26,48N,11W	Callaway	X	X		B	X		
Loch Leonard	L3	27.0	SE18,46N,30W	Cass	X	X		B	X		
Loggers Lake	L3	21.0	10,15,31N,03W	Shannon	X	X		A	X		
Lone Jack Lake	L3	31.0	11,47N,30W	Jackson	X	X		B	X		
Lone Tree Lake	L3	21.0	N NE15,46N,6W	Montgomery	X	X		B	X		
Lonedell Lake	L3	40.0	16,40N,02E	Franklin	X	X		B	X		
Long Branch Lake	L2	2686.0	NW18,57N,14W	Macon	X	X		A	X		X
Long Lake	L3	10.0	NW NW 03,25N,12E	Stoddard	X	X		B			
Longview Lake	L2	953.0	04,47N,32W	Jackson	X	X		A	X		
Lost Valley Lake	L3	37.0	SE NE17,43N,04W	Gasconade	X	X		A	X		
Lower Taum Sauk Lake	L3	200.0	33,33N,02E	Reynolds	X	X		B	X		
Lucky Clover Lake	L3	20.0	20,38N,04W	Crawford	X	X		A	X		
Mac Lake - Ziske	L3	28.0	SW NE 17,34N,05W	Dent	X	X		B	X		
Macon Lake	L3	189.0	SE NW17,57N,14W	Macon	X	X		B			X
Malta Bend Community Lake	L3	4.0	25,51N,23W	Saline	X	X		B	X		
Manito Lake	L3	77.0	08,09,44N,17W	Moniteau	X	X		B	X		
Maple Leaf Lake	L3	127.0	04,48N,26W	Lafayette	X	X		B	X		
Marais Temps Clair	L3	725.7	19,48N,06E and 24,48N,5E	St. Charles	X	X		B	X		

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Marceline City Lake (New)	L1	200.0	SW SE14,56N,19W	Chariton	X	X		B			X
Marceline Reservoir	L1	68.0	SE 28,57N,18W	Linn	X	X		B			X
Mark Twain Lake	L2	18132.0	26,55N,07W	Ralls	X	X		A	X		X
Marshall Habilitation Center Lake	L3	10.0	11,50N,21W	Saline	X	X		B	X		
Martin Lakes	L3	17.0	11,26N,11E	Stoddard	X	X		B			
Maysville Lake	L1	27.0	NE NE 4, 58N,31W	DeKalb	X	X		B	X		X
Maysville Lake	L1	12.0	NW NE03,58N,31W	DeKalb	X	X		B	X		X
McCormack Lake	L3	9.0	NW SW 24,25N,04W	Oregon	X	X		A	X		
McDaniel Lake	L1	218.0	NE SE26,30N,22W	Greene	X	X		B			X
Melody Lake	L3	32.0	27,42N,03W	Franklin	X	X		A	X		
Memphis Reservoir	L1	39.0	NE NE14,65N,12W	Scotland	X	X		B			X
Middle Fork Water Comp.	L1	103.0	NW SW06,63N,31W	Gentry	X	X		B	X		X
Milan Lake North	L1	13.0	SE SE02,62N,20W	Sullivan	X	X		B			X
Milan Lake South	L1	37.0	SE SE,02,62N,20W	Sullivan	X	X		B			X
Mineral Lake	L3	8.0	01,42N,03W	Franklin	X	X		B	X		
Monopoly Lake	L3	1045.0	30,27N,08E	Stoddard/Wayne	X	X		B	X		
Monroe City Lake	L1	94.0	SW,NE,34,56N,07W	Ralls	X	X		A	X		X
Monroe City Lake A	L1	17.0	NW NW13,56N,08W	Monroe	X	X		B			X
Monroe City Lake B	L1	55.0	30,56N,07W	Monroe	X	X		B	X		X
Monsanto Lake	L3	18.0	SE NW 20,36N,5E	St. Francois	X	X		A	X		
Montrose Lake	L3	1444.0	NE NW33,41N,27W	Henry	X	X		B			X
Mozingo Lake	L1	898.0	13,64N,35W	Nodaway	X	X		B	X		X
New Cambria Lake	L1	9.0	SW NE07,57N,16W	Macon	X	X		B			X
Nims Lake	L3	251.0	SW NW24,34N,06E	Madison/St. Francois	X	X		A			
Noblett Lake	L3	26.0	25,26N,11W	Douglas	X	X		A			
Nodaway Lake	L3	73.0	SW NE20,65N,35W	Nodaway	X	X		B	X		
Norfolk Lake	L2	1000.0	21N,12W	Ozark	X	X		A	X		
North Bethany City Reservoir	L3	78.0	SE27,64N,28W	Harrison	X	X		A	X		
North Lake	L3	19.0	SW NE28,45N,31W	Cass	X	X		B	X		
North Sever Lake	L3	12.5	20,63N,11W	Knox	X	X		B	X		
O'Brian Lake	L3	50.0	NW NW19,47N,01E	St. Charles/Warren	X	X		B			
Odessa Lake	L1	87.0	NW NE15,48N,28W	Lafayette	X	X		B	X		X
Odessa Lake (Old)	L1	22.0	NW NW14,48N,28W	Lafayette	X	X		B			X
Old Bethany City Reservoir	L1	18.0	02,63N,28W	Harrison	X	X		B			X
Old Mud Lake	L3	126.0	16,20,21, 56N,36W	Buchanan	X	X		B			
Old Plattsburg Lake	L1	15.0	13,55N,32W	Clinton	X	X		B			X
Opossum Hollow Lake	L3	63.0	SW NE29,39N,03W	Crawford	X	X		A	X		
Oscie Ora Acres Lake	L3	50.0	SE NW10,28N,33W	Jasper	X	X		B			
Otter Lake	L3	250.0	17,24N,09E	Stoddard	X	X		B	X		
Painted Rock Lake	L3	5.0	11,42N,11W	Osage	X	X		B			

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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDF	WBC	SCR	DWS	IND
Palmer Lake	L3	102.0	22,36N,01E	Washington	X	X		A		X	
Panther Creek D-1 Lake	L3	28.0	32,65N,26W	Harrison	X	X		B			
Parker Lake #1	L3	20.0	SE SE 31,35N,09E	Perry	X	X		A			
Parker Lake No. 2	L3	80.0	NE SW32,35N,09E	Perry	X	X		A			
Parole Lake	L3	42.0	07,36N,01E	Washington	X	X		A		X	
Paul Herring Lake	L3	44.0	NW SW17,46N,09W	Callaway	X	X		B			
Peabody Wildlife Area Lakes	L3	36.0	04/09,38N,32W	Bates	X	X		B		X	
Peaceful Valley Lake	L3	158.0	NE NE25,42N,06W	Gasconade	X	X		A			
Peculiar Lake	L1	25.0	SE SW22,45N,32W	Cass	X	X		B			X
Penn's Pond Lake	L3	8.0	06,34N,11W	Pulaski	X	X		B		X	
Perco Lakes	L3	21.7	SW5, NW8 ,34N,10E	Perry	X	X		B			
Perry C.A. Lakes	L3	16.4	28.33.34.36.48N,24W;30,48N,23 W	Johnson	X	X		B		X	
Perry County Community Lake	L3	89.0	SW NE22,35N,10E (SUR 856)	Perry	X	X		B			
Pershing St. Park Lakes	L3	12.0	2,11,57N,21W	Linn	X	X		A			
Peters Lake	L3	62.0	NW NW4,50N,16W	Howard	X	X		B		X	
Pike Lake	L3	17.0	02,59N,25W	Livingston	X	X		A		X	
Pim Lake	L3	7.0	SWNW 20,36N,5E	St. Francois	X	X		A		X	
Pinewoods Lake	L3	22.0	07,26N,03E	Carter	X	X		B		X	
Pinnacle Lake	L3	115.0	SE NE24,47N,05W	Montgomery	X	X		A			
Plattsburg 6 Mi. Lane Lk.	L3	57.0	SW SE11,55N,32W	Clinton	X	X		B			X
Pleasant Hill Lake	L1	91.0	SW SE01,46N,31W	Cass	X	X		B		X	X
Plover Lake	L3	14.0	15,47N,31W	Jackson	X	X		B		X	
Poague C.A. Lakes	L3	80.0	19,30,42N,26W, 24,42N,27W	Henry	X	X		B		X	
Pomme de Terre Lake	L2	7820.0	SW NE2,36N,22W	Hickory/Polk	X	X		A		X	
Pony Express Lake	L3	240.0	NE 33,58N,31W	DeKalb	X	X		A		X	
Port Hudson Lake	L3	48.0	16,43N,03W	Franklin	X	X		B		X	
Port Perry Lake	L3	155.0	NE SE08,34N,09E	Perry	X	X		B			
Potosi Lake	L3	20.0	SW NW 35,37N,03E	Washington	X	X		A		X	
Prairie Home C.A. Lakes	L3	20.0	4,5,6,46N,15W	Cooper/Moniteau	X	X		B		X	X
Prairie Lee Lake	L3	144.0	NE SW27,48N,31W	Jackson	X	X		A		X	
Primrose Lake	L3	33.0	23,38,04E	St. Francois	X	X		B		X	
Radio Springs Lake	L3	8.0	08,35N,31W	Vernon	X	X		B		X	
Railroad Lake	L3	8.0	34,45N,15W	Moniteau	X	X		B		X	
Raintree Lake	L3	248.1	06,46N,31W	Cass	X	X		A		X	
Raintree Plantation Lake	L3	115.0	29,41N,04E	Jefferson	X	X		A		X	
Ray County Community Lake	L3	23.0	13,52N,28W	Ray	X	X		A		X	
Raymond Claus Lake	L3	8.7	SE SE17,27N,11E	Stoddard	X	X		B			
Rice Lake East	L3	11.0	09,27N,11E	Stoddard	X	X		B			
Rice Lake West	L3	4.0	SENE 9,27N,11E	Stoddard	X	X		B		X	
Rinquelin Trail Community Lake	L3	27.0	NE 29,39N,11W	Maries	X	X		B		X	

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WATER BODY	CLASS	ACRES	LOCATION	COUNTY(IES)	LWW	AQL	CDH	WBC	SCR	DWS	IND
Ripley Lake	L3	18.0	10,23N,01E	Ripley	X	X		A	X		
Riss Lake	L3	134.0	SW SW25,51N,33W	Platte	X	X		B	X		
Roach Lake	L3	106.0	30,57N,23W	Livingston	X	X		A	X		
Robert G. Delaney Lake	L3	110.0	30,27N,16E	Mississippi	X	X		B			
Roby Lake	L3	10.0	34/35,33N,11W	Texas	X	X		A	X		
Rock House Lake	L1	62.0	NE SW 36,65N,27W	Harrison	X	X		A	X		X
Rocky Fork Lake	L3	60.0	NW SE31,50N,12W	Boone	X	X		B			
Rocky Hollow Lake	L3	20.0	SE33,53N,30W	Clay	X	X		B	X		
Rothwell Lake	L3	27.0	SE NE03,53N,14W	Randolph	X	X		B	X		
Salisbury City Lake (Pine Ridge Lake)	L3	25.0	15,53N,17W	Chariton	X	X		B	X		
Savannah City Reservoir	L1	20.0	07,59N,35W	Andrew	X	X		A	X		X
Sayersbrook Lake	L3	36.0	NE SE28,38N,01E	Washington	X	X		B			
Schell Lake	L3	371.0	SE NE06,37N,28W	St. Clair/Vernon	X	X		A	X		
Schuyler Co. PWSD #1 Lake	L1	33.0	SE SE04,64N,015W	Schuyler	X	X		B			X
Scioto Lake	L3	5.0	NE NE 30,38N,06W	Phelps	X	X		B			
Sears Community Lake	L3	32.0	18,63N,19W	Sullivan	X	X		A	X		
See Tal Lake	L3	11.0	NW NW01,45N,05W	Gasconade	X	X		B			
Sequiota Park Lake	L3	3.0	09,28N,21W	Greene	X	X		B			
Settles Ford C.A. Lakes	L3	968.0	33,43N,29W;4,5,8-10,15-18,42N,29W;13,42N,30W	Bates	X	X		B	X		
Seven Springs Lake	L3	18.0	23-24,36N,06W	Phelps	X	X		A	X		
Shawnee Lake - Turner	L3	15.0	SW NW 17,34N,05W	Dent	X	X		B	X		
Shelbina Lake	L1	45.0	NE SW20,57N,10W	Shelby	X	X		B	X		X
Shelbyville Lake	L1	32.0	SE SE19,58N,10W	Shelby	X	X		B	X		X
Shepard Mountain Lake	L1	21.0	01,33N,03E	Iron	X	X		B	X		X
Silver Lake	L3	54.0	SW SW16,46N,32W	Cass	X	X		B	X		
Silver Lake-Levee 3	L3	2464.0	06,55N,20W	Chariton	X	X		B			
Sims Valley Community Lake	L3	42.0	17,20,27N,08W	Howell	X	X		A	X		
Smithville Lake	L2	7190.0	E SW13,53N,33W	Clay	X	X		A	X		X
Snow Hollow Lake	L3	31.0	26/27,34N,03E	Iron	X	X		B	X		
South Pool-Levee 3	L3	263.0	1,2,11,12,13,55N,21W	Chariton	X	X		B			
Spencer Lake	L3	7.0	NW19,66N,14W	Schuyler	X	X		B			
Sportsman Lake	L1	7.0	NE SE,04,49N,06W	Montgomery	X	X		B			X
Spring Fork Lake	L1	178.0	NE SW21,44N,21W	Pettis	X	X		B	X		X
Spring Lake	L3	87.0	10,61N,16W	Adair	X	X		A			
Squaw Creek NWR Pools	L3	1230.0	36,61N,39W	Holt	X	X		B			
Sterling Price Community Lake	L3	23.0	17,53N,17W	Chariton	X	X		A	X		
Stockton Lake	L2	23680.0	NE NE15,34N,26W	Cedar	X	X		A			X
Strobel Lake	L3	33.0	SW SW 01,27N,09E	Stoddard	X	X		B			
Sugar Creek Lake	L1	308.0	NE SE16,54N,14W	Randolph	X	X		B			X
Sullivan City Lake	L3	5.0	NE NW 20,40N,02W	Crawford	X	X		B			
Summerset & Fisherman's Lakes	L3	75.0	SW15,39N,04E	Jefferson	X	X		A	X		

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Sunfish Lake	L3	27.0	SUR 3097, 155, 1840, 47N,07E	St. Louis	X	X		B	X		
Sunnen Lake	L3	206.0	SW SE04,37N,01E	Washington	X	X		A			
Sunrise Lake	L3	21.0	NE SW 36,39N,04E	Jefferson	X	X		A	X		
Sunset Lake	L3	50.2	NW SE33,39N,07E	Ste. Genevieve	X	X		B			
Sunset Lake	L3	6.0	13,44N,12W	Cole	X	X		B			
Sunshine Lake	L3	500.0	19,29,32,51N,27W	Ray	X	X		A	X		X
Swan Lake-Levee 5	L3	1425.0	10,55N,21W	Chariton	X	X		B			
Table Rock Lake	L2	41747.0	SW NW22,22N,22W	Stone	X	X		A	X		
Tarsney Lake	L3	17.0	SE E22,48N,30W	Jackson	X	X		A	X		
Tea Lake No. 1	L3	25.0	08,41N,04W	Gasconade	X	X		B	X		
Teal Lake	L3	84.0	NE SW36,51N,09W	Audrain	X	X		B	X		
Tebo Freshwater Lake	L3	250.0	SW SW25,43N,25W	Henry	X	X		B			
Ten Mile Pond	L3	70.0	07,04,03,24N,16E	Mississippi	X	X		B			
Terre Du Lac Lakes	L3	371.4	(18,19,20,28,29,30,31)37N,4E,25,37N,3E	St. Francois	X	X		A	X		
Thirtyfour Corner Blue Hole	L3	9.0	35,25N,17E	Mississippi	X	X		B			
Thomas Hill Reservoir	L2	4400.0	NE SE24,55N,16W	Randolph	X	X		A		X	X
Timberline Lakes	L3	51.0	23,24,38N,04E	St. Francois	X	X		A	X		
Tobacco Hills Lake	L3	16.0	NW11,53N,35W	Platte	X	X		B	X		
Tom Bird Blue Hole	L3	6.0	29,27N,18E	Mississippi	X	X		B			
Trenton Lake Lower	L1	103.0	SW 15,61N,24W	Grundy	X	X		B		X	
Trenton Lake Upper	L1	68.0	NE SE15,61N,24W	Grundy	X	X		B		X	
Twin Borrow Pits	L3	44.0	13,20N,13E	Pemiscot	X	X		B	X		
Twin Lake	L3	49.0	NW NW31,66N,23W	Mercer	X	X		B			
Twin Lakes	L3	22.9	SW SW,22,48N,13W	Boone	X	X		A	X		
Union City Lake	L3	5.0	27,43N,01W	Franklin	X	X		B			
Unionville (Old) Lake	L1	13.0	34,66N,19W	Putnam	X	X		A	X		X
Unionville Reservoir	L3	74.0	27,66N,19W	Putnam	X	X		B			
Unity Village Lake #1	L1	16.0	25,48N,32W	Jackson	X	X		B	X		X
Unity Village Lake #2	L1	26.0	24,48N,32W	Jackson	X	X		B	X		X
Valle Lake	L3	42.0	31,39N,05E	Jefferson	X	X		A	X		
Van Meter St. Park Lake	L3	8.0	24,52N,22W	Saline	X	X		A	X		
Vandalia Community Lake	L3	35.0	SE35,52N,06W	Audrain	X	X		B			
Vandalia Reservoir	L1	28.0	NE NE12,53N,05W	Pike	X	X		B	X		X
Wahoo Lake	L3	10.0	14,38N,04E	St. Francois	X	X		B	X		
Wakonda Lake	L3	78.0	13,14,60N,06W	Lewis	X	X		A	X		
Walt Disney Lake	L3	19.0	31,57N,18W	Linn	X	X		A			
Water Works Lake	L1	22.0	NE SE 03,53N,14W	Randolph	X	X		B	X		X
Watkins Mill Lake	L3	87.0	NW 22,53N,30W	Clay	X	X		A	X		
Waukomis Lake	L3	76.0	SW 17,51N,33W	Platte	X	X		A	X		
Weatherby Lake	L3	185.0	SW SE15,51N,34W	Platte	X	X		A	X		

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Wellsville City Lake	L1	12.0	NW SE 33,50N,06W	Montgomery	X	X		A			X
West Arrowhead Lake	L3	58.0	18,23N,08W	Howell	X	X	X	B	X		
Whetstone Creek C.A. Lakes	L3	62.0	5,6,8,9,48N,07W; 31,32,49N 7W	Callaway	X	X		B	X		
Whispering Valley Lakes	L3	30.0	35,44N,03W	Franklin	X	X		A	X		
WhitesideLake White Memorial SWA	L3	28.0	SW SUR 1686,51N,01W	Lincoln	X	X		B	X		
Wildwood Lake	L3	17.0	NE 09,48N,32W	Jackson	X	X		B			
Willow Brook Lake	L1	53.0	SE NE 04,58N,13W	DeKalb	X	X		B			X
Willow Lake	L3	29.0	27-34,34N,32W	Vernon	X	X		B	X		
Willowwood Lake	L3	45.0	26 & 35,48N,05E	St. Charles	X	X		B	X		
Windsor City Lake	L3	16.0	06,43N,23W	Pettis	X	X		B			
Winegar Lake	L3	8.0	18,43N,13W	Cole	X	X		B			
Wing Lake	L3	19.9	NW SW 14, 35N,03E	Washington	X	X		A	X		
Wolf Bayou Mud Bayou	L3	37.0	04,19N,13E	Pemiscot	X	X		B	X		
Worth County Community Lake	L3	17.0	32,65N,32W	Worth	X	X		B	X		
Wyaconda Lake	L1	9.0	NW NW33,65N,09W	Clark	X	X		B	X		X

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